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PRESIDENT'S ADDRESS

NEW YORK SOCIETY OF ORTHODONTISTS

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IN COMPLIANCE with the bylaws of our Society, it falls upon me, as the retiring president, to give an account of the activities during my term of office and make suggestions and forecasts.

So much time has elapsed since we last met that it would at first seem that our greatest activity for the past year has been canceling meetings, the wisdom of which I realized many times must have been questionable to many of you, and an explanation for which would, I feel, be in order at this time.

Meetings had previously been held during the war period, and it was not until the ODT clamped down on all meetings with over fifty in attendance that we found it impossible to hold our meeting of a year ago. However, even with that information, we wrote to the Office of Defense Transportation to get a definite ruling, and received an application form to fill out so that the War Committee on Conventions could determine "whether the meeting you are planning to hold is necessary in the war effort." In reply to this application we received notice that a permit to hold our March meeting was denied, and I, therefore, sent out my cancellation letter of February first.

To show how eager my executive committee was to have a program ready for the next meeting, I received a letter from the chairman, Dick Lowrie, on April 30, stating that it looked as though we might be able to hold the November meeting, and asking if he should go ahead with the necessary preparations.

Read before the New York Society of Orthodontists, March 4, 1946.

The answer was, "Yes," so that by early fall of last year we were all ready to go. But then we found that, although the ODT has eased up, the hotels had filled up, and it was going to be impossible for any out-of-town man to be assured of hotel reservations. Therefore, we canceled the November meeting.

So much for canceled meetings. Here we are back again, the Waldorf is now able and glad to give us ample guest accommodations and meeting rooms. The war is over, and of thirty-nine of our members who were in our Country's service, half are back. I should like to pause now and ask all men who were in Service and are with us today to rise.

May I advise our members returned from Service, who have perhaps just been released and are not aware of the fact, that we have a Post War Planning Committee, of which Dr. Salzmann is Chairman, to provide information for orthodontists and for those interested in orthodontists, regarding associateships, dental office space, location of practice, etc. Also, in their letter of last September to the membership, the Committee states that it will give consideration and study to special legislation affecting orthodontics. You will hear a report from the Chairman of that Committee at our business meeting later today. Also of interest to you from the State of New York will be a report from Dr. Waugh, who is chairman of the committee from this Society to cooperate with the New York State Department of Health in an orthodontic care program for those children whose maocclusion may reasonably be considered as a physical handicap.

This year, 1946, is the twenty-fifth year of the existence of our Society, and let us harken back to the founders of this Society, William C. Fisher, Martin Dewey, J. Lowe Young, Henry C. Ferris, Victor Hugo Jackson, C. W. B. Wheeler, Leuman M. Waugh, and Joseph D. Eby. Of these stalwart men who had the vision to give birth to what is now the largest component society in membership of the American Association of Orthodontists, the last two men, Leu Waugh and Joe Eby, are the surviving members, and what towers of strength they are and always have been in the interest of our Society.

I now come to my recommendations: The first has to do with the manner in which the President of the American Association of Orthodontists is chosen and placed in nomination. The present bylaws of the American Association of Orthodontists call for the nominating of the president from the floor. This is done at the annual meeting, previous to his election as president-elect.

The choice of a president for the American Association of Orthodontists is a matter of the most vital importance to the future life and welfare of our parent organization, and national leadership should be the basis on which a president is chosen, regardless of what part of the country he may reside in. He should be the most experienced man, the most representative man, and the most representative orthodontist that can be found, to stand at the top of our national organization. If he be put aside simply because he was recently preceded in office by a member of his sectional society, and in his place some less eligible man be elected because that man's sectional society felt it their turn to have a member in that high office, such action could certainly not be reconciled as taken for the greatest good of the society and the specialty of orthodontics.

In order to have the president be the representative choice of the entire membership, I advocate a nominating committee for the American Association of Orthodontists which will be made up each year of the duly elected directors, or their alternates, of each sectional society, plus one member at large, if that seems reasonable, and the President of the American Association of Orthodontists. The President should be the presiding officer, with power to vote only in case of a tie. This would make a committee of nine, which would not be unwieldy in size, and would be representative of the entire membership. I further recommend that the New York Society instruct their director to go to the meeting of the American Association of Orthodontists next fall prepared to present and work to put this proposal through.

My second recommendation regards the specific date of our November meeting. In holding our meetings on the second week of November, we have found hotel congestion, due to the Army-Notre Dame game on the Saturday preceding our Monday meeting. Also, if Armistice Day comes on one of our meeting days, the out-of-town members' wives have found the shops closed all morning, but, of course, this practice might not always be continued. I would recommend that the November meeting be held on the Monday and Tuesday of November that would not be in conflict with Armistice Day or Election Day of that year. This would not conflict with our constitution and bylaws as long as the meeting is in November.

At our business meeting today, there was proposed by one of our members from New York, Dr. Henry Barber, who is a past president of both this Society and the American Association of Orthodontists, that the name of the New York Society of Orthodontists be changed to the Northeastern Society of Orthodontists. This proposal originated with one of the founders of the New York Society, Dr. Leuman Waugh. As my third recommendation, I would most strongly endorse the proposal. As was pointed out, while our Society was founded in New York, our boundaries now range from Canada down through the District of Columbia. It seems, therefore, that in many respects our section should not be designated merely as New York, but should follow the other component societies by having a geographically designated name. It is the opinion of many who have given this very careful thought and study that this would benefit our Society and be most acceptable to our own membership, as well as to the entire American Association of Orthodontists.

My fourth recommendation has to do with the matter of letters of endorsement accompanying applications for membership in Article 3, Section 3, Subdivision 2.

Men graduating from postgraduate courses, getting their certificates of proficiency from the schools, I feel, should have an additional endorsement to those two now required from the faculty for associate membership.

In making a forecast for our Society, may I issue this warning: The future of our Society will depend upon how united we stand in working, not only to maintain our high professional standards, but to raise them. We must at all times be keenly alert in guarding the strong foundation upon which our

specialty has been built. In these times, when the public is expecting and demanding more health service, here are those in the dental profession who would take advantage of this. In the guise of endeavoring to give a full dental service in their practices, they are carrying on orthodontic treatment without thoroughly preparing themselves first in this exacting service through post-graduate study or its equivalent.

Such groups should be made aware of the fact that at all times we stand ready to help them when they are properly qualified to render orthodontic service to their patients; but, at the same time, until they are, it is in the public interest as well as for the reputation of orthodontics that we condemn their activities as an attempt to perform specialized practice without proper educational and clinical preparation.

Tomorrow I shall relinguish my office to my successor, but, before doing so, may I say how much I have appreciated the honor of representing this Society and enjoyed my long term of office. The pleasure has been made possible by the loyal help and support given me by the men of my committees, and if our meetings have been successful, it has been wholly due to their efforts. To them I give my sincere thanks.

FACTORS OF INFLUENCE IN PRODUCING A STABLE RESULT IN THE TREATMENT OF MALOCCLUSION

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THE subject that I have selected for this paper is one that has not been discussed in any great detail in the past. In fact, the only previous contribution I have knowledge of, that deals with this topic in a somewhat similar manner, is a recent paper by Dr. George A. Hahn, entitled, "Retention—the Stepchild of Orthodontia," published in the *Angle Orthodontist* for January and April, 1944.

It is true that many case reports have been given which included models taken several years after all mechanical support had been removed, but a careful analysis of the factors involved in these successful end results was not given enlightening consideration. It is my purpose to try to present as many basic principles as possible that must be incorporated in every treatment plan if the operator is to attain a stable result as a routine end product. I firmly believe that the time has arrived when the specialty should face the fact that far too high a percentage of cases disintegrate when mechanical support is removed from the treated deformity. If this is so, then there must be something basically wrong with the methods of correction. Certainly, this is an appropriate subject for consideration.

While it is unfortunate that it has taken our specialty so many years to arrive at the stage when the discussion of routine permanent results in treatment could be taken up in a practical and purposeful manner, yet consideration of this subject was necessarily delayed until clinical data were in evidence to substantiate theoretical suggestions. To Dr. Tweed must be given full credit for evolving a technique which made possible the exhibition of a large number of consecutively treated cases that remained permanently satisfactory to parents, patients, and operators. Consequently, a sufficient number of such cases are now available for analysis, and from such study, conclusions may be drawn that will be of great value.

Those of us who practiced in the earlier years of specialization had but one set rule to go by in treatment, and this was to produce the correct adjustment of occlusal inclined planes of all the teeth and to evolve dentures of good outline form with perfect tooth alignment. We, of course, called this normal occlusion, and it was our ideal and our orthodontic religion. We firmly believed that stabilization would automatically be obtained if this standard of perfection could only be reached in our completed cases.

Because our viewpoint was narrowed down to this one factor, we failed to recognize the unsurmountable defects that were inherent to nearly all cases

Read before the New York Society of Orthodontists, March 5, 1946.

of malocclusion. I would particularly emphasize this word *unsurmountable.* These untreatable conditions led to repeated failures. Yet we kept on bucking such immovable stone walls and, much to our discredit, did not profit from many a bitter experience.

It may seem strange that we did not fully comprehend the various other basic factors that entered into this intricate structural composite that we adopted as our ideal and attempted to produce by mechanical stimulation of deformed tissues. Yet, when I quote the definition of "normal occlusion" given in Dr. Angle's seventh edition, which was the outstanding and most advanced textbook on orthodontics for a period of twenty-five years, it may offer some explanation for our narrow viewpoint. It may be of further interest to note that the seventh and last edition of Dr. Angle's text was the only edition of his book in which a definition of normal occlusion is to be found. This definition reads as follows:

"Occlusion is the normal relations of the occlusal inclined planes of the teeth when the jaws are closed." Dr. Angle then goes on to say, "The normal human denture in its completeness includes not only the jaws, alveolar process, dental arches, and especially the teeth and peridental membrane, which to us are of prime importance, since on them chiefly our operations are performed, but also the muscles of the lips, cheeks, tongue and mouth, the nasal passages, palate and throat, as these assist the teeth in performing their functions. They are also powerful factors in establishing and maintaining either harmony or inharmony in the development and arrangement of the teeth, and this just in proportion as they are, singly or collectively, normal or abnormal in their own development and functions."

While, from this, we can fully realize that Dr. Angle had a most comprehensive viewpoint of normal occlusion as we understand it today, yet most of his students failed to grasp the entire picture or, if they did grasp it, their minds were so centered upon the importance of inclined plane adjustment as the objective in treatment, that they either completely overlooked any abnormalities of environmental structures that were present or believed that such attending abnormalities would be eliminated as a result of gaining correct inclined plane adjustment.

To recapitulate our viewpoint in these early years, I would sum it up as follows:

We knew that malocclusion was associated with and caused by abnormalities in muscular structures and actions, and with faulty growth of the supporting bony framework but we believed that these conditions would be overcome by obtaining normal relationship of the occlusal inclined planes and the correct functional stimulation that would succeed such an adjustment. While the word development was used frequently by early writers in our field, yet it was not differentitated from the term growth but rather held to be synonymous. Hence we had no knowledge of the complicated adjustments that took place in the facial structures as the organ of mastication was evolved through the twenty formative years.

Now let us compare this early definition of normal occlusion with a more recent one that I hope many of you are perfectly familiar with: "Normal occlusion is that structural composite consisting fundamentally of the teeth

and jaws and characterized by a normal relationship of the so-called occlusal inclined planes of teeth that are individually and collectively in architectural harmony with their basal bones and cranial anatomy, exhibit correct proximal contacting and axial positioning and have associated with them a normal growth, development, location and correlation of all environmental tissues and parts."*

In this definition we have a complete description of the ideal which is one of the basic principles upon which the science of orthodontics is founded. If it were possible to obtain this ideal in every case of malocclusion that we treated, permanent stability would certainly always follow. Conversely, when we do not gain permanent stability in our treated cases, we must conclude that some of the details in this picture are missing.

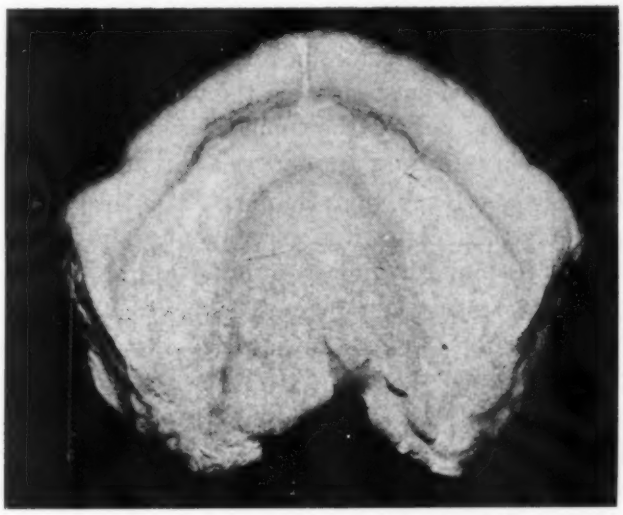


Fig. 1.—Maxillary impression showing muscular pressure posterior to the molar teeth.

It is quite safe to say that every malocclusion is at variance with certain descriptive details in this ideal. Hence our initial study, from the viewpoint of treatment, should always be directed upon the deformity that we are called upon to overcome. As I have emphasized so strongly in previous writings, again I would state that "far too little attention is directed to the study of the original malocclusion as an index of the most practical method of correcting the deformity when viewed from standpoint of establishing a permanently stabilized product."

Indeed, I would go back one step farther in our studies for corrective procedures. I refer to an analysis of the impression, previous to pouring the model. If we note that the distal walls of the maxillary impression, i.e., those segments immediately behind the last molar teeth are thin and somewhat concave on their upper surfaces, we may be sure that strong muscular pressure is being exerted upon the posterior ends of the maxillary denture.

If the anterior wall of the mandibular impression is shallow and also concave on its upper surface, this is an indication of abnormal action of the

*Strang, R. H. W.: Textbook of Orthodontia, ed. 2, Philadelphia, 1943, Lea & Febiger.

mentales muscles. These two conditions will warn the operator that this denture is subjected to excessive muscular pressure and cannot be modified in a forward or in a posterior direction.

Let us also bear in mind the fact that the teeth in every deformed denture are in malocclusion and remain in that condition only by virtue of certain stipulations included in our definition of the normal organ. To illustrate this point, it may be deducted that these dental units are, to the greatest degree possible, in harmony with their basal bones and also that there is correlation between the various environmental tissues and parts. In other words, a deformed denture is the product of abnormal forces that have reached a balance and furthermore, it is endowed with sufficient basal support to resist displacement of its component parts under functional stress. Now these two conditions are the most essential and powerful stabilizers of denture form and individual tooth location, both in normal and in malocculding dentures, yet, in past years, they have received little or no consideration from the viewpoint of planned treatment. It is my belief that this is one of the main reasons why relapses are so frequently encountered when retaining appliances are removed.

Consequently it is necessary to formulate an entirely new concept of the requirements for successful treatment if permanent stability is to be the goal of attainment. This concept must include two important objectives:

First: The plan of treatment must aim to *preserve* those conditions in the deformed denture that simulate the normal, i.e., the balance and harmony of abnormal environmental structures and the essential support of undergrown osseous bases.

Second: It must take into consideration the *elimination* of those conditions that are abnormal, such as incorrect inclined plane adjustment, faulty axial positioning of individual teeth, tooth rotations, and excessive overbites.

From the standpoint of stability, the first objective is of far greater importance than the second. Consequently, because we are dealing with a deformity that is characterized by undergrown osseous tissues that have reached a state of permanent inactivity as far as change of form is concerned, and with environmental muscular structures that are under the control of nervous impulses of extreme dictatorial power, there are comparatively few cases in which the second objective can be attained without sacrificing the more important value of the first objective.

If we are to face facts, we must put all our cards on the table. If a normal organ is to be evolved as an end product, we must have normal building material to work with. In malocclusion we do not have this kind of building material and we have no way of obtaining or producing perfect parts for constructive purposes. Hence we must do the best we can with the faulty structural building elements that are offered to us. Therefore, in order to preserve those factors that are most influential in maintaining stability, we must frequently sacrifice ideal objectives and eliminate certain selected parts, in order to accomplish as great a proportion of the second objective as is practical without losing the extreme value of the first objective.

In all methods of treatment that I have knowledge of, except the present-day or latest Tweed principles, no consideration whatever has been given to conserving the properties that are maintaining the deformed denture as a stabilized unit. Attention is only directed toward establishing the normal by overcoming the abnormal factors. In the Tweed philosophy of treatment, we have our attention directed to the necessity of maintaining the mandibular incisors in a position overlying their basal bone of support, if we are to produce stabilization in the end product of treatment. This is a most important step forward, but it is not the whole answer to the problem of stability for it does not take into consideration the necessity of preserving the balance of forces that have been established in these more or less abnormal muscular tissues that surround the malformed dentures.

Owing to the fact that this important detail was not emphasized or appreciated by the majority of operators who practiced the Tweed philosophy of treatment in the early days of its introduction, the dental arches were widened to an excessive degree, in order to obtain alignment of the mandibular incisors and still keep them in a position of proper basal support, and coincidentally avoid extraction of any teeth. Unfortunately, by this procedure, environmental balance was upset and the buccal teeth were also moved off their basal ridges of support. Consequently, when retention was removed, these buccal segments returned to their original positions and the incisor teeth again began to exhibit malalignment. This error has now been recognized by Tweed and his followers and this accounts for the increased percentage of extractions now found necessary for ultimate stability in the end products of treatment.

Now let us discuss the method of treatment that is most universal today and note how far it strays from the objectives enumerated as essential if stabilization is to be obtained.

The first consideration, still foremost in the mind of a great many operators, is tooth alignment with proper adjustment of inclined planes. To such practitioners the primary objective is to provide space from molar to molar to accommodate the displaced and rotated dental units anterior to these molar teeth.

Now this can be done only in three ways or by combining these three ways. Either the anterior teeth must be moved forward, or the buccal teeth must be moved laterally, or the buccal teeth must be shifted backward. But when teeth are moved forward or laterally, the only normal factors now present in this deformed organ are at once modified. Harmony with basal bones is destroyed and correlation with environmental structures is broken down. In other words, balance and harmony in this deformed denture are upset.

The one way that these important factors can be preserved in gaining space from molar to molar is by moving the buccal teeth backward. But it has been proved by clinical tests and also with cephalometric radiograms that the ability to move teeth distally is extremely limited. Consequently, there is no way available to provide additional space anterior to the molar teeth for blocked-out and rotated dental units except by moving the incisors off their osseous base and shifting the buccal teeth laterally against powerful antagonizing muscular tissues and also off their supporting basal bone. What, then, is the common-sense

answer to this problem? Is it not the reduction of the number of tooth units and utilizing the space thus provided for the corrective procedures that are required?

Therefore, the initial two factors that I would enumerate as essential to assuring a stable result in treatment are: first, avoid changing the width of the deformed denture to any great degree, and second, do not move the incisor teeth forward in order to gain space for their alignment.

In this connection, the mandibular canine and molar teeth are key units in determining the limits of width in correcting the deformity. The buccolingual positions of these four teeth, in most cases, is controlled by the muscle force exerted upon them. The muscles in action on the labial side are the canini, the triangulares, and the orbicularis oris for the canines, and the buccinators for the molar teeth. The tongue balances these forces on the lingual side. If these muscular forces were acting normally and jaw growth had reached its normal limits, there would be sufficient space from canine to canine to accommodate the incisor teeth and the denture would be of good form. If proper space for the incisors is lacking, this is due to either abnormal muscular pressure or failure in jaw growth. Neither of these two abnormal conditions can be overcome by treatment or eliminated from the equation of denture stability. Consequently, we cannot move the canines labially or the premolars and molars buccally because muscular force is bound to move them back into balance when mechanical support is removed. Or if the muscle force is normal, basal bone growth must be lacking, and lateral movement, to any great extent, would carry these teeth off their positions of basal support. Hence the canines and buccal teeth must be moved backward until there is sufficient denture area to permit proper alignment of the incisors. If this distal movement is to be other than of minimum amount, space must be provided for these tooth movements. The only way that this necessary denture area can be obtained is by the extraction of premolar teeth.

In discussing the position of the canine teeth, it should be understood that the location of the root apices is a factor of importance. If these teeth exhibit a marked lingual axial inclination and sufficient space for the incisors can be obtained by simply tipping the canine crowns to correct vertical axial inclination, such a crown movement, of course, is indicated, and no extraction would be necessary. This movement would not be destroying the factor of balance or harmony present in this malocclusion because such a crown displaced would probably be due to other conditions than muscle pressure or failure in basal growth. These other causes should then be found and overcome, of course. Traumatic occlusion is the usual cause of this condition.

For the same reasons that labial or buccal movement of the canines is not permissible, the labial movement of the incisors is contraindicated. These teeth are rotated or displaced lingually because it is a compromise position dictated by the requirements of stability. It is Nature's method of keeping them with proper basal support and under balanced muscular force. Hence, if such stability is to be maintained, they, in turn, can only be moved laterally and lingually but never labially. Lateral movement, i.e., movement away from

the mid-central point of the denture, can be made only after the canines have been shifted distally.

Many operators, including the writer, have been using the predetermined arch postulate as a guide to proper denture form for the completed case. For the past few years the form of the archwire used in this connection has been governed by the original practice of Dr. Tweed, which was to produce broad dentures in order to reduce the percentage of extraction cases. As previously stated, this excessive widening of the dentures in the canine, premolar, and molar areas provided sufficient denture area to permit the lingual movement of the

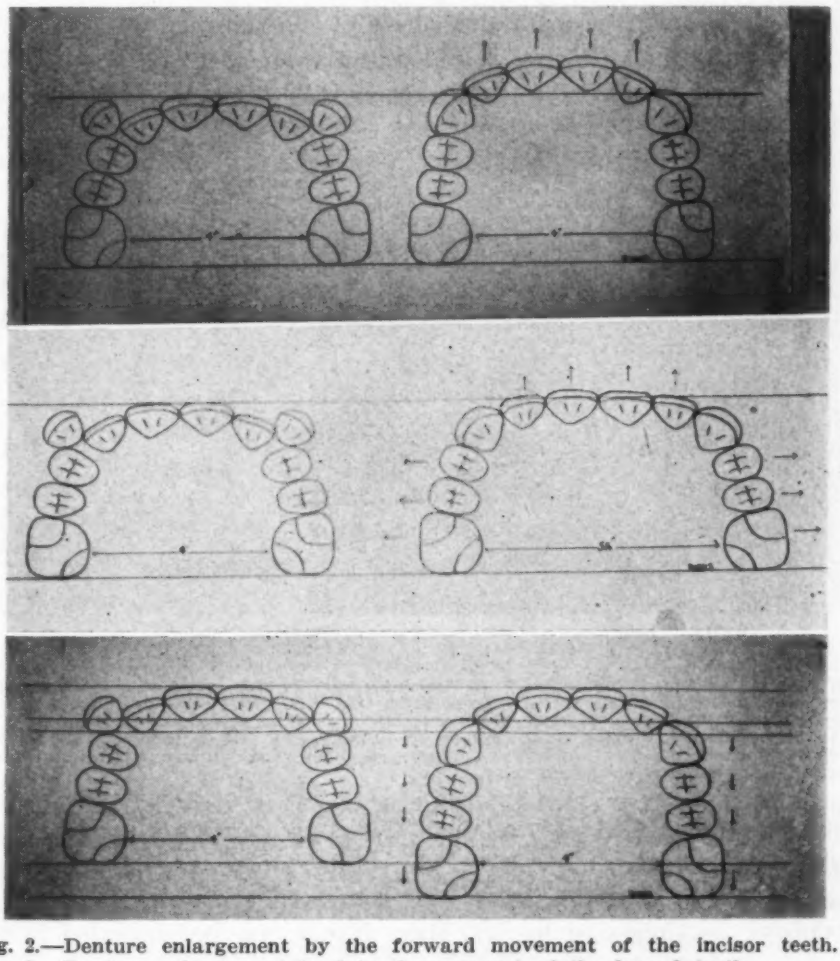


Fig. 2.

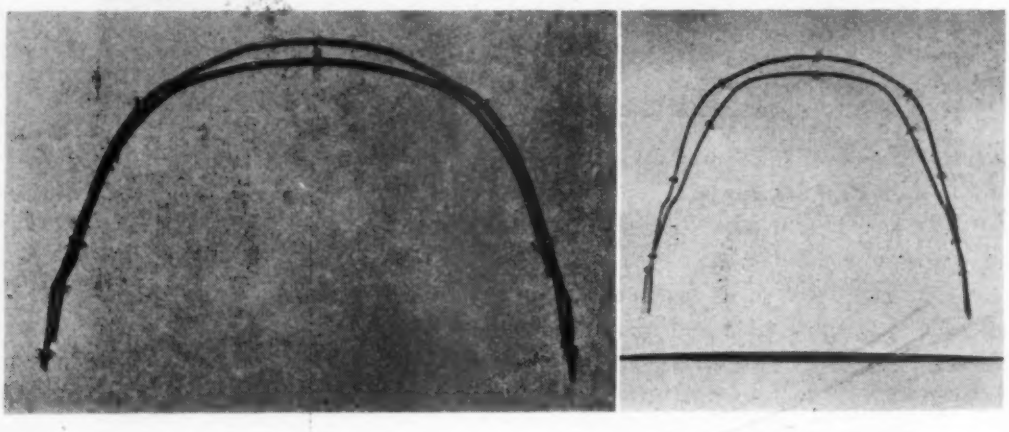
Fig. 3.

Fig. 4.

Fig. 2.—Denture enlargement by the forward movement of the incisor teeth.
Fig. 3.—Denture enlargement by lateral movement of the buccal teeth.
Fig. 4.—Denture enlargement by the distal movement of the buccal teeth.

incisors, whereby they were given proper basal support. Among the first to oppose this technique in the East was Dr. Harry Bull, and full credit should be given him for his enlightening discussion on this particular fallacy of the early Tweed treatment procedure. He found, as have many of us, including Dr. Tweed himself, that dentures so treated did not remain stabilized after the mechanical restraint was removed.

However, the writer believes that the predetermined ideal archwire form is too important a part of treatment technique to be cast aside, and to that end he has been working on this particular factor for some time, trying to bring it into harmonious association with the objectives outlined in this new plan of treatment. The results of this effort have evolved a pattern that not only can be applied to our treatment technique but also is most enlightening in determining the limitations of tooth movements that are permissible in corrective procedures. To form these archwires, the same ideal drawings are made as previously used* but the technique of bending the wires has been changed. As many of you are not interested in this particular form of technique, I will not go into a detailed description of this phase of the subject. However, this new method of forming the archwires is added as a supplement to this paper, so that all who desire may use this technique. A comparison of the old and new forms of ideal archwires is, however, appropriate to demonstrate by illustration in this paper (Fig. 5). Observing this, you will note that the curvature of the wires in



A. *B.*

Fig. 5.—*A*, Archwire forms used in the original Tweed technique. Excessive expansion of the buccal segments of the dentures permitted the incisors to be placed in positions overlying their basal bone, and extraction of teeth was thus avoided. Stability in the final result was jeopardized by destroying muscular balance. *B*, New forms of archwires suggested by the author whereby muscular balance is preserved during treatment thus assuring better stability in the corrected case.

the premolar areas has been eliminated. These archwires are now made without deviation from a straight line from the canine labial ridge to the mesial approximal surface of the first molar. Of course they diverge buccally in these areas. Offsets, as suggested by Dr. Hays Nance, are incorporated in the first molar areas of both dentures and also in the second molar segments of the maxillary denture. In the second molar areas of the mandibular denture, slight lingual bends have been found essential. These arch wires are much narrower in the canine regions and also in the premolar and molar areas than the arch wires previously advocated. The two archwires gradually assume the same width as the molar areas are approached, until they actually overlie one another at the distal sections of the first molar teeth.

*See *Textbook of Orthodontia*, ed. 2, page 562.

Since devising this new technique for ideal archwire formation, I have been placing the finished archwire on the model of the case in malocclusion. I am amazed to find, in a high percentage of cases, that the molar width in these original models is harmonious with this new archwire form. Furthermore, from the markings on the archwire it was clearly evident that the lack of space for crowded incisors was due to a forward translation of the buccal teeth. In addition to these two factors, it also demonstrated that width across the mandibular canines was usually but little reduced in most malocclusions, suggesting quite clearly that the lack of denture area for the incisor teeth was caused by the forward positioning of the buccal teeth rather than the lingual displacement of the canines.

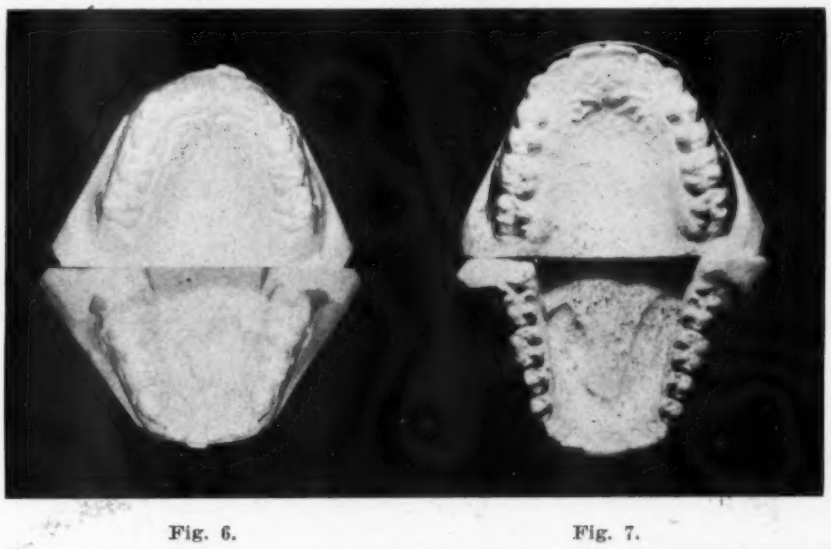


Fig. 6. Fig. 7.

Fig. 6.—Models of case completed in 1940, with permanent stability of result. The new forms of archwire overlying these models indicate that dentures should not be widened if muscular balance is to be preserved. The author attributes the stability attained in this case to the fact that these dentures were not expanded in treatment.

Fig. 7.—Models of the case shown in Fig. 6, with the same archwires overlying the dentures. The case was corrected without expansion and remained stabilized.

When this archwire is adjusted to the mandibular model of the maloccluding case, with the incisor segment of the archwire located in a position that is harmonious with the underlying basal bone, and it is found that denture space for complete tooth alignment cannot be attained without moving either the anterior teeth labially or the buccal teeth laterally to the location outlined by the wire in these respective regions, the operator may be quite certain that extraction of the premolar teeth is the only method of correction available whereby permanent results can be assured.

The basic error in such dentures is the lack of sufficient anterior growth in the jawbones to accommodate the full complement of dental units. This cannot be compensated for by moving the incisor teeth forward or the buccal teeth laterally, for muscular pressure will not permit them to remain stabilized. Neither will an increased amount of basal bone be evolved by such a procedure.

Fig. 8.

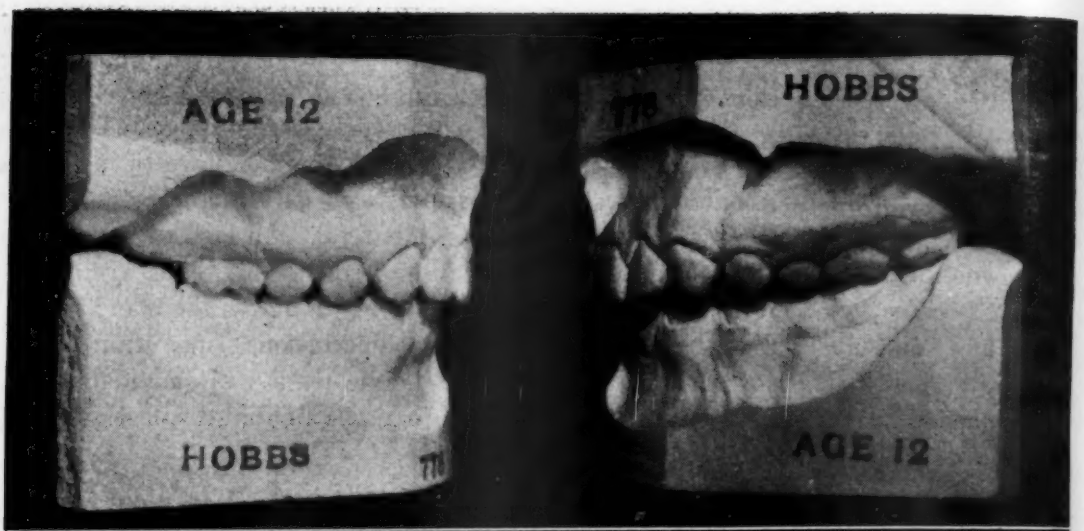


Fig. 9.

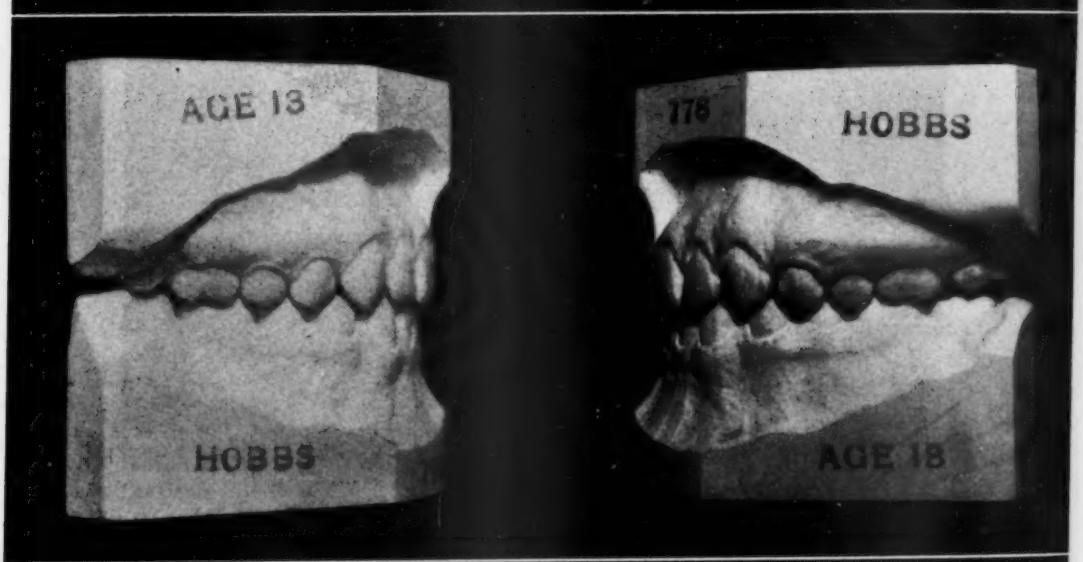


Fig. 10.

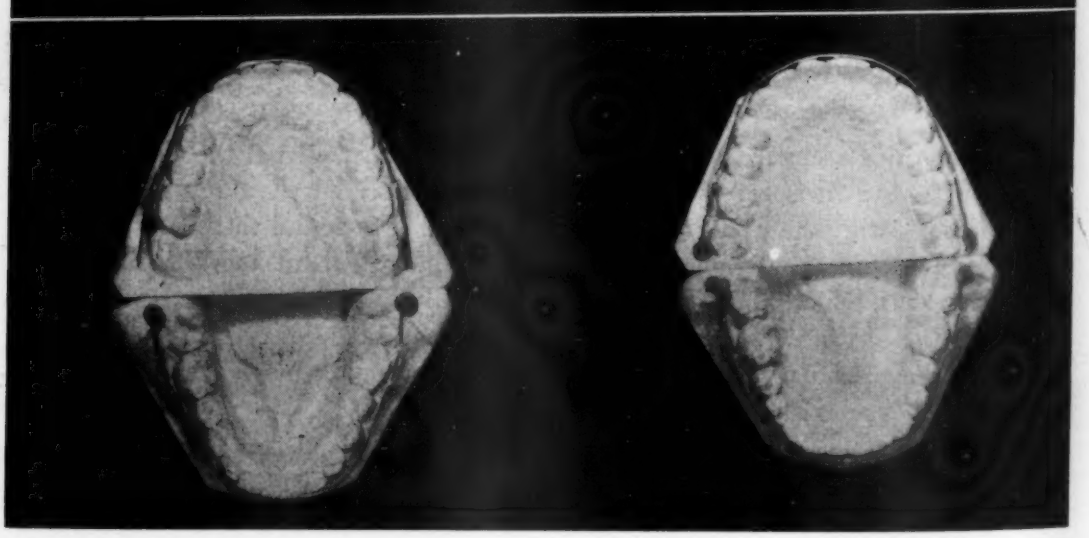


Fig. 8.—Class I case, transitional toward Class II, in which permanent stability was obtained in treatment.

Fig. 9.—Case shown in Fig. 8, after treatment.

Fig. 10.—New forms of archwires superimposed on the dentures of the case shown in Figs. 8 and 9. Treatment has preserved muscular balance and all the teeth have been placed in positions overlying their basal bone.

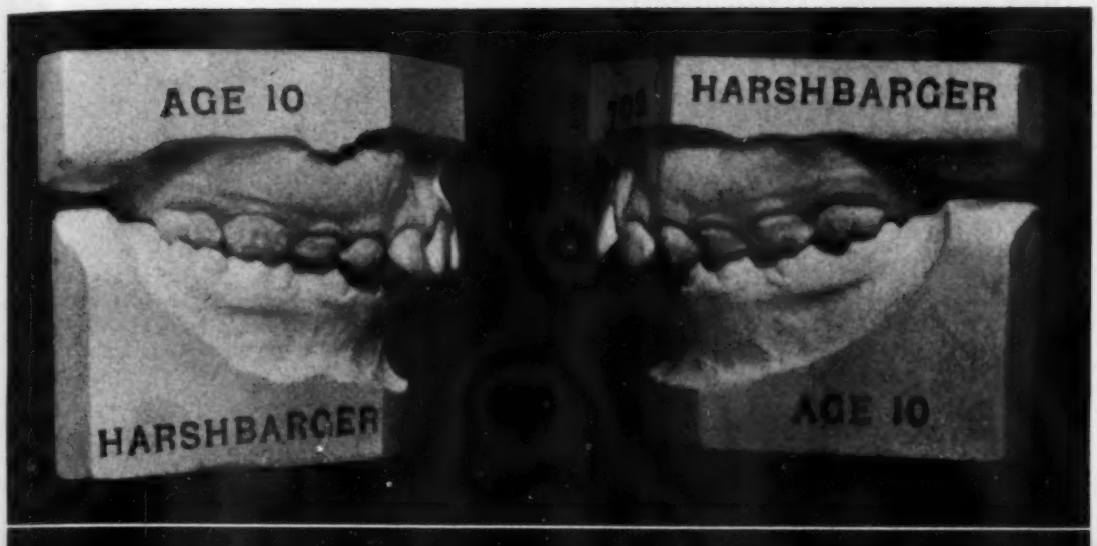


Fig. 11.

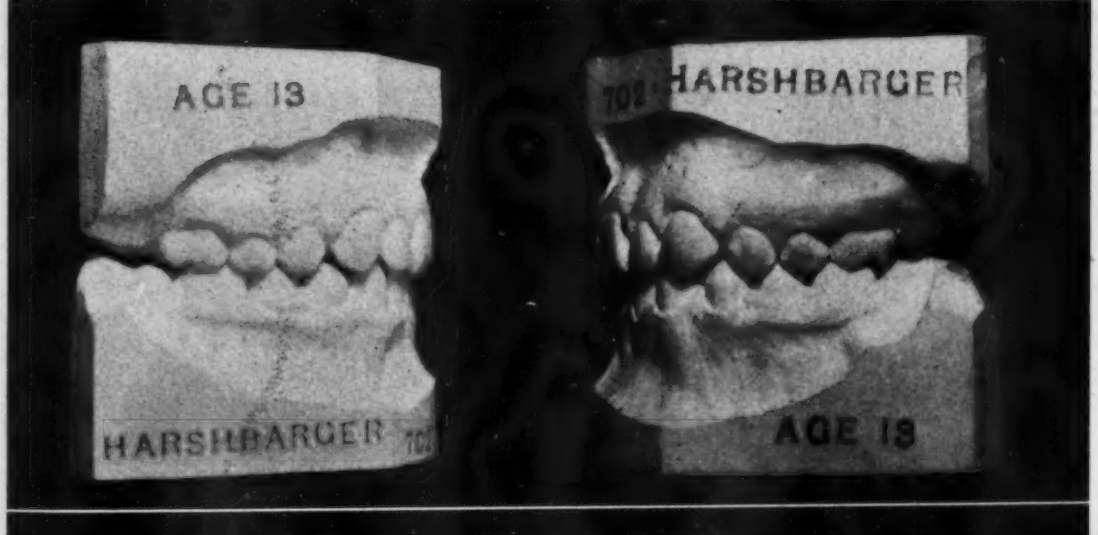


Fig. 12.

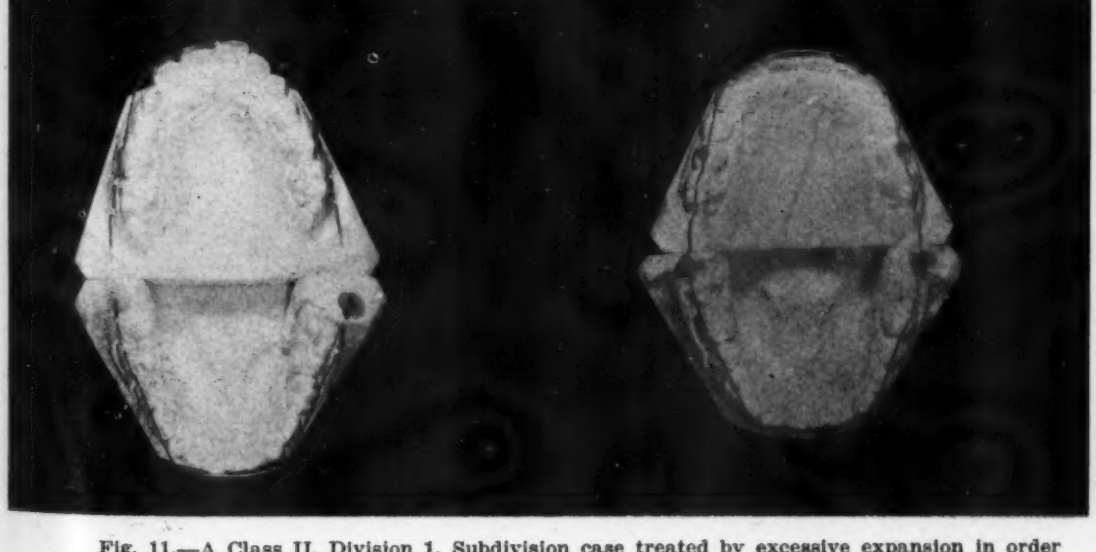


Fig. 13.

Fig. 11.—A Class II, Division 1, Subdivision case treated by excessive expansion in order to place the incisor teeth in positions overlying basal bone without resorting to extraction of the premolar teeth.

Fig. 12.—Case shown in Fig. 11, after treatment.

Fig. 13.—New forms of archwires overlying the casts seen in Figs. 11 and 12, showing excessive expansion whereby the buccal teeth were displaced from basal bone support and muscular balance was destroyed.

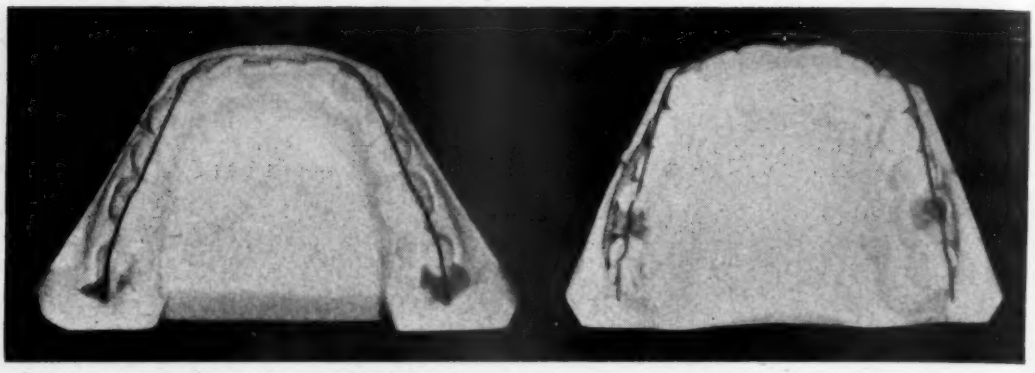


Fig. 14.—Casts ,of case shown in Figs. 11 and 12, taken one year after the retaining appliances were removed. Same archwires overlying these dentures. Note that muscle pressure has gradually restored the original canine width and the mandibular incisors are now being thrown out of alignment. This case should have been treated by extracting two maxillary and two mandibular first premolar teeth and the canine teeth subsequently moved distally instead of buccally.

Fig. 15.

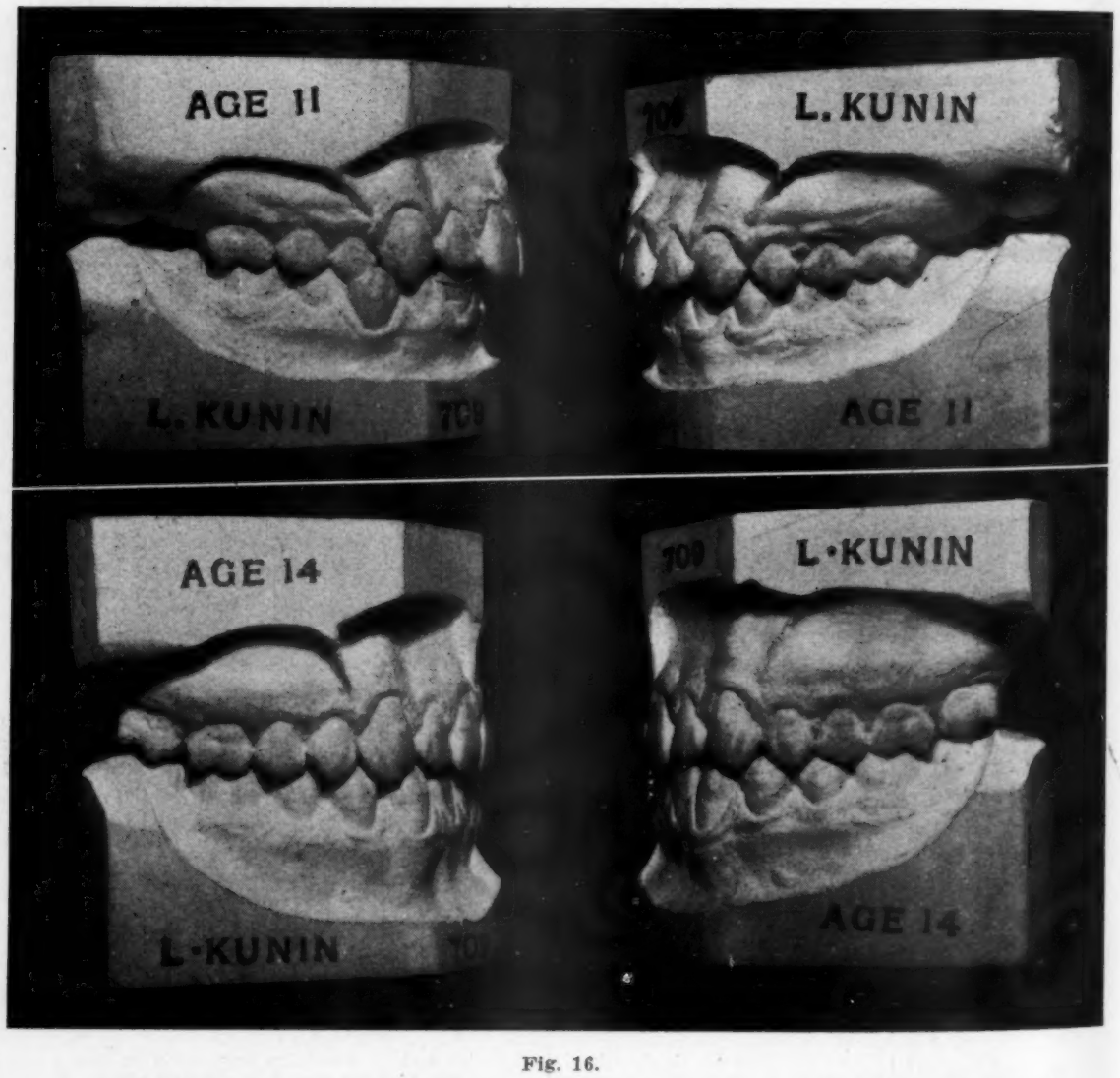


Fig. 16.

Fig. 15.—A Class I case treated by expansion in an effort to place the incisor teeth in positions overlying basal bone and so avoid extractions.

Fig. 16.—Case shown in Fig. 15, after treatment.

The other factors associated with stability in the end product are quite familiar to you and can be discussed in less detail.

Owing to the fact that perverted muscular action cannot be reduced to any great degree in the majority of our patients, even though muscle training is insisted upon as part of the active treatment, as it should always be, it is important that the teeth be left in such axial positions at the end of treatment

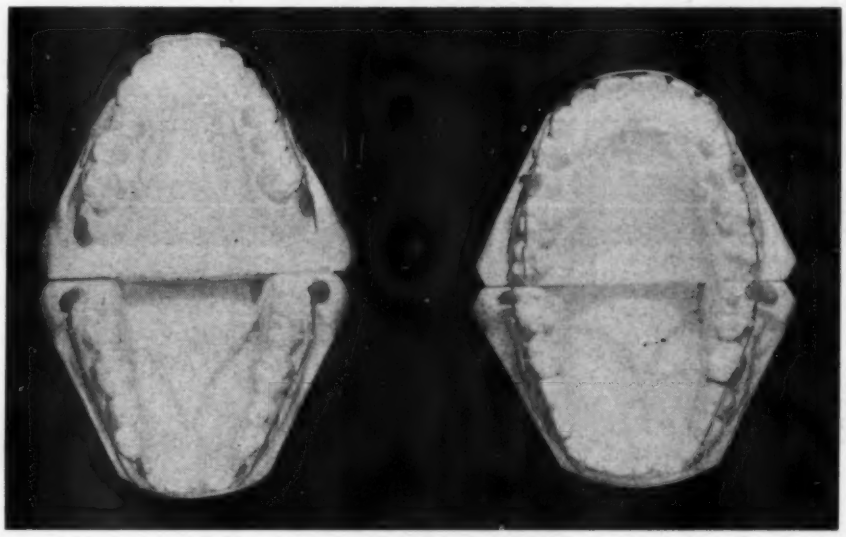


Fig. 17.—New forms of archwires superimposed on the dentures of the case shown in Figs. 15 and 16, demonstrating excessive expansion in the buccal areas.

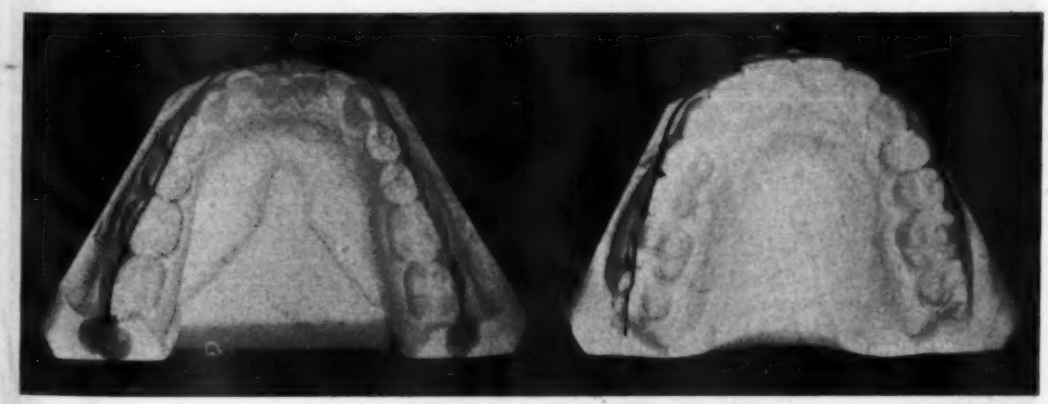


Fig. 18.—Casts of the case shown in Figs. 15 and 16, taken one year after the retaining appliances were removed. Note the displacement of the mandibular incisor teeth caused by muscular pressure which has forced the canine teeth lingually to positions of original width as shown by overlying archwires. Muscular balance should have been preserved by resorting to the extraction of the first premolar teeth and the subsequent distal movement of the canines to establish space for the incisor teeth.

that they will be most resistant to this abnormal action. Hence, a mild lingual axial inclination in all of the teeth in both dentures with the exception of the maxillary incisors, is a strategic adjustment. The buccal teeth, with the exception of the canines, should be placed in distal axial inclination. The canines, in nonextraction cases, should be in true vertical axial inclination, from a mesio-

Fig. 19.

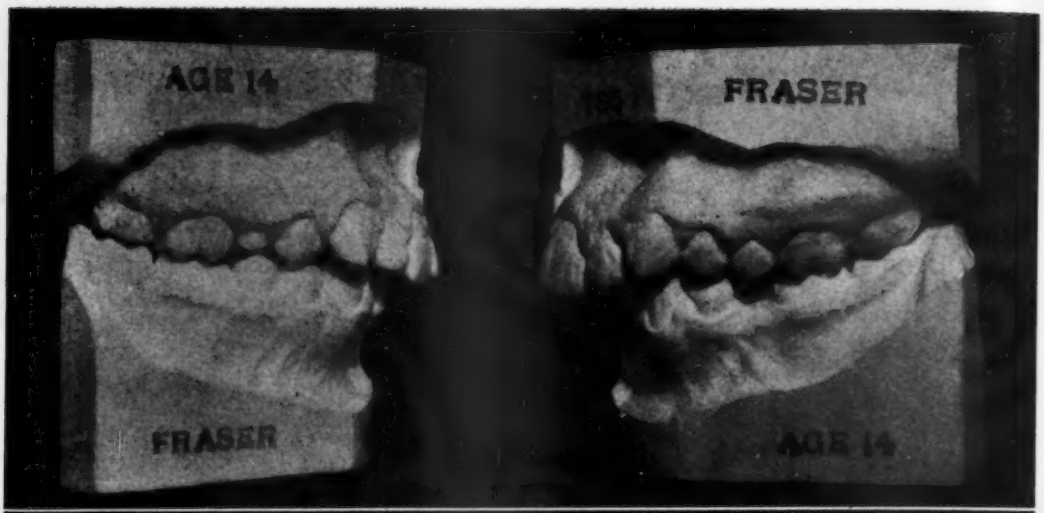


Fig. 20.

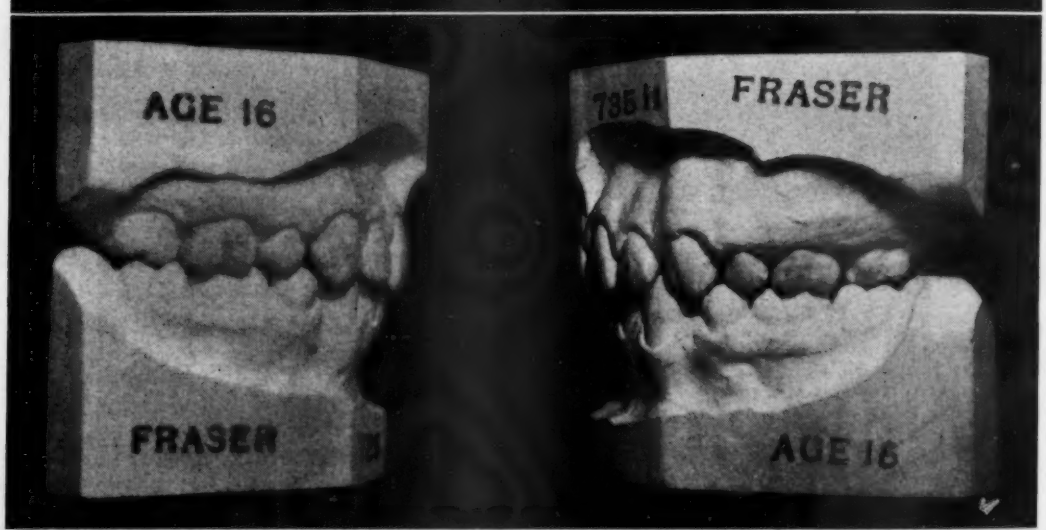


Fig. 21.

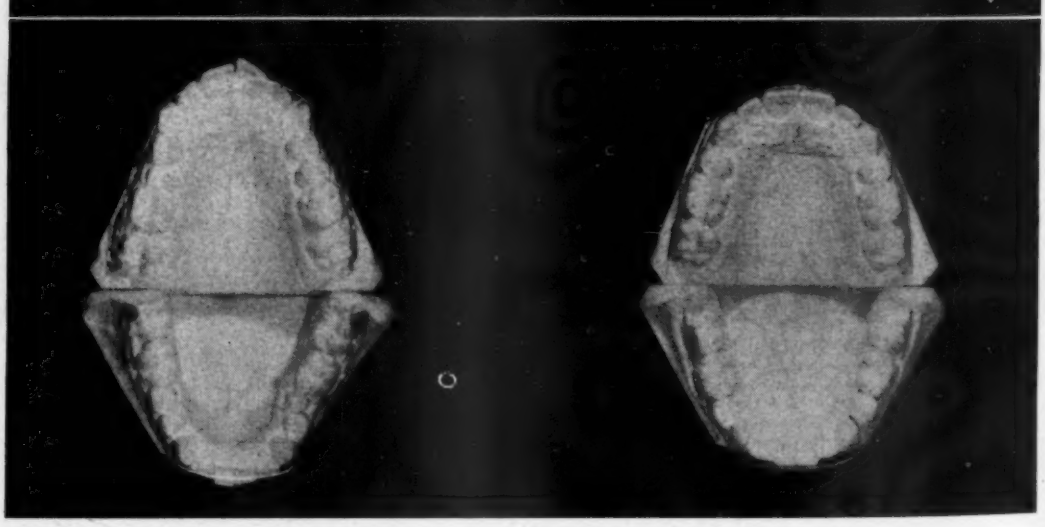


Fig. 19.—A Class II, Division 1 case, treated by the extraction of the maxillary and mandibular first premolar teeth and the distal and lingual movement of the six anterior teeth of both dentures.

Fig. 20.—Case shown in Fig. 19, after treatment.

Fig. 21.—New forms of archwires superimposed on the dentures of the case shown in Figs. 19 and 20. This indicates that no expansion was made in treatment and thus muscular balance was preserved and all the teeth were placed in positions overlying their basal bones. This case has maintained stability after the retaining appliances were removed.

distal standpoint, while in extraction cases, they should exhibit a distinct mesial-axial inclination in order to assure close approximation of the apices of their roots with those of the premolar teeth.

Great care should be taken to avoid any superocclusion of the canine teeth. The bands on these teeth should be located well occlusally to the middle third of the crown of the tooth. Functional movements of the denture should be carefully observed before the appliances are removed so as to be sure that these key teeth do not interfere with one another in lateral excursions of the jaw. When the bands are removed and the teeth have settled, there may be other points of interference that will have to be eliminated by skillful grinding.

The reduction of any abnormality in the overbite is, of course, absolutely essential as part of the treatment procedure. Overcorrection of this defect is always advisable, and if the area at fault is due to infraocclusion of the molar and premolar teeth, an open-bite at the end of active treatment, resulting from elevation of these teeth beyond the amount required, is always advisable. I am still depending upon the use of bite plates to correct these overbites due to infraocclusion of the buccal teeth, and the bite plane on such plates is built down at least $\frac{1}{16}$ inch beyond the maxillary incisor occlusal edges.

Rotated teeth should be overcorrected, as they invariably tend to relapse to a considerable degree when the mechanical restraint is removed.

Finally, we have come to the last factor of importance and the only one, as stated at the beginning of the paper, that was thought essential in the early days, i.e., normal adjustment of the inclined planes. These should be intimately fitted to one another before retaining devices are inserted.

In Class II and Class III cases, where overtreatment is always routine, the appliances should be left in position for a period of three to six weeks after the elastics are discontinued, so that the rebound can occur and proper plane adjustment be brought to fruition.

It has been my practice for some time to remove the appliances and permit the case to settle, as it were, without any retaining device in position. By doing this, active proximal contacting will be gained and close inclined plane adjustment obtained. Frequently it will be found that retention will be required in one denture only, and in some cases no retention will be needed. The cases should be seen at least every three weeks while undergoing this automatic settling. Closed-bite cases usually will need mechanical support, especially if the patient is passing through the stage of active body growth.

CONCLUSIONS

1. Practically all cases of malocclusion are complicated by structural defects, either intrinsic or environmental, that are not amenable to treatment.

2. Careful analysis of the impressions and the plaster casts of each case will furnish the operator with important data pertaining to limitations in treatment.

3. Every malocclusion represents a denture that is in balance with all associated structures.

4. Corrective procedures must preserve this balance if the result of treatment is to remain stabilized.

5. The elimination of abnormal positions and adjustments of individual teeth must be confined to such forms of corrective movements as will not upset the existing structural balance.

6. If a normal organ is to be evolved, all structural elements, both intrinsic and environmental, must be normal.

7. In malocclusion we do not have normal structural material. Consequently, it is frequently necessary to compensate for this condition by sacrificing ideal objectives and eliminating certain selected parts.

8. Stabilization demands that not only the incisors but also the teeth in the buccal segments of the dentures be located in positions overlying their bony bases of support. Hence, excessive buccal movement of the molar, premolar, and canine teeth, to permit the replacement of the incisor teeth on their osseous foundations, is not conducive to stabilization.

9. A predetermined archwire form that will produce a final result which tends to preserve the balance and harmony that is present in the malocclusion, is an exceedingly helpful guide to the operator both in case analysis and in treatment.

10. Proper axial positions of the teeth, the elimination of excessive overbites, and the overcorrection of tooth rotations and the mesial or distal malpositions of teeth are important details for the operator to observe in his treatment procedures.

In closing, I can truthfully state that never before, in all my thirty-nine years of practice, have I come to the end of active treatment of my cases with such a feeling of confidence that the result I have obtained will remain permanently as a monument to successful orthodontic guidance. Furthermore, I have never been able to exhibit such a large number of consecutively successful treatments as at the present moment. Credit for this revolutionary and exceedingly satisfactory and comforting change goes in full measure to my friend and colleague, Charles Tweed.

It is not easy for me to stand here today and contradict so much of the theory and technique that I have preached and taught for many years. It is only because I am faced with clinical facts which prove that idealism, as exemplified by adhering to the fixed rule of nonextraction of teeth in the treatment of malocclusion, is not practical from the standpoint of denture stability, structural welfare, and esthetic harmony, that I can acknowledge my past errors and change my trend of thought. But, having tested results by trying both methods of procedure, I now feel that I am in a position to judge which plan of treatment offers the best results from the viewpoint of the patient, who, I believe, should receive primary consideration. Hence, I do not hesitate to say that I was wrong in my former statements and to recommend, most enthusiastically, this new philosophy of treatment.

SUPPLEMENT

NEW TECHNIQUE FOR IDEAL ARCHWIRE FORMATION*

Maxillary Archwire

Step 1.—Using the proper size of surface and groove on the archwire former, bend the archwire to conform to the inner surface of the red drawing only as far distally as the distal canine marks. From this point on, the ends of the archwire should diverge in straight lines and be bent at the distal canine marks until they overlie Dot 2. (Fig. 1.)

Step 2.—Grasp the archwire with pliers No. 442 with the beaks at the site of the right distal-central, mesial-lateral mark, and have this mark located halfway between the edges of the pliers, i.e., centered between the beaks. Give the mesial section of the archwire a lingual bend of a degree that causes the end of the right side of the archwire to touch the black drawing. (If the second molar is included in the setup, the marking indicating the mesial surface of this tooth is always considered to be the end of the archwire throughout this entire description.) Replace the archwire on the glass slab and test for flatness. This should be done after each bend is made. (Fig. 2, left side.)

Step 3.—Duplicate this bend on the left side.

Step 4.—With the pliers in the same position on the right side as in Step 2, give the distal section of the archwire a buccal bend of sufficient amount to cause it to lie just on the lingual side of Dot 2. (Fig. 2, right side.)

Step 5.—Duplicate this bend on the left side of the archwire.

Step 6.—Place the plier beaks on the right distal-lateral, mesial-canine marks, having this mark lie in contact with the distal surface of the plier beaks. Gradually curve the canine area of the archwire, by a series of five slight lingual bends, the first of which is made distally to the pliers and each succeeding one made subsequent to shifting the pliers distally the width of their beaks, until the archwire overlies Dot 1.

Step 7.—Make the same series of bends on the left side. (Fig. 3.)

Step 8.—Place the pliers on the right side of the archwire with the distal surface of their beaks $\frac{1}{16}$ inch mesially to the mark for the buccal ridge of the mesiobuccal cusp of the first molar, and give the mesial portion of the archwire a buccal bend of a degree that causes the right end of the archwire to lie just to the buccal side of the black drawing. If the second molar is included in the appliance adjustment, the mark on the archwire that indicates the location of the mesial surface of the second molar is considered, in this technique, as the end of the archwire.

Duplicate this bend on the opposite side.

Owing to the fact that the location of the buccal ridge of the first molar teeth in a case that is to be treated is seldom in harmony with the marks that are placed on the ideal archwire as a result of tooth measurements, the buccal offset formed by Steps 8 and 9 should not be placed in the archwire until it can be inserted in the mouth and its correct location for each individual case thus ascertained.

*The diagram upon which these archwires are formed is illustrated in Plate V, in the *Textbook of Orthodontia*, ed. 2, Philadelphia, 1943, Lea & Febiger.

Note: In order to apply this technique the operator must first measure the teeth of the maloccluding denture and transfer these measurements to straight pieces of archwire, as described on pages 563 and 568 of the *Textbook of Orthodontia*, ed. 2.

Step 9.—With the pliers in the same location as in Step 8, give the distal section of the archwire a lingual bend of sufficient degree to cause the end of the archwire to overlie Dot 3. Repeat this bend on the left side. (Fig. 4, left side.)

Step 10.—If the second molar is included in the appliance setup, a second bayonet bend is made in this area of both sides, in the following manner:

Grasp the right side of the archwire with the pliers, having the mesial surface of their beaks on a mark indicating the mesial proximal surface of the second molar. Give the mesial segment of the archwire a buccal bend of sufficient degree to cause the actual end of the archwire to lie $\frac{1}{10}$ inch lingually to the black drawing.

Fig. 1. Fig. 2.

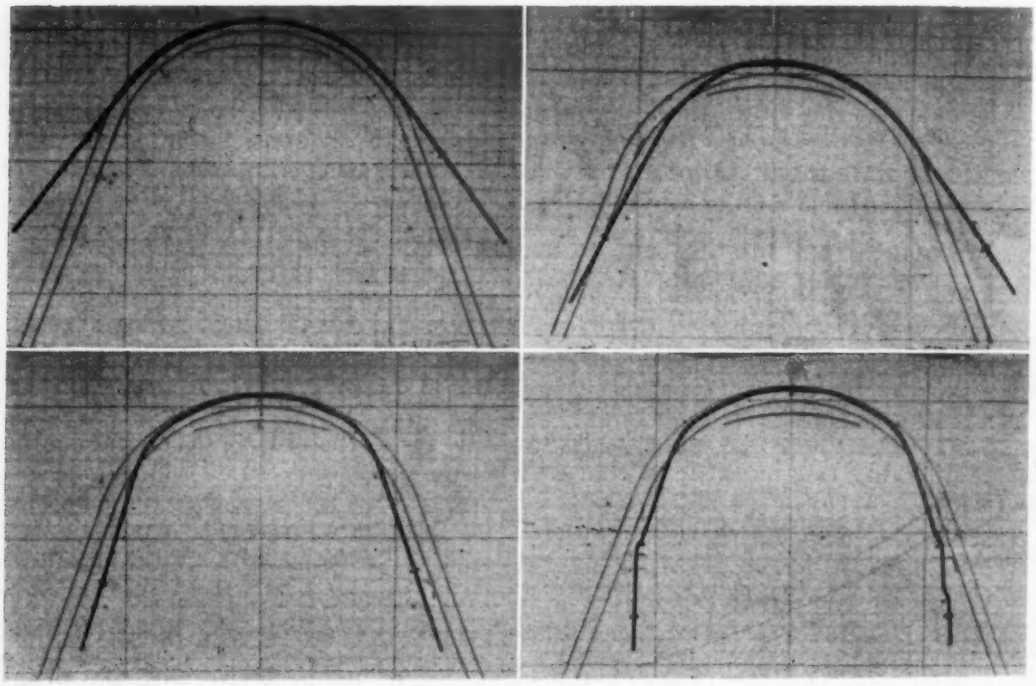


Fig. 3. Fig. 4.

Fig. 1.—Maxillary technique. Archwire formed to inner side of red drawing as far as distal canine marks; ends of archwire overlying Dot 2.

Fig. 2.—Maxillary technique. Left side shows first step of bends made at distal-central, mesial-lateral location. Right side shows the completion of this modification by bending distal to the pliers.

Fig. 3.—Maxillary technique. Completion of the five bends made in both canine areas.

Fig. 4.—Maxillary technique. Left side, completion of bends made $\frac{1}{16}$ inch in front of the first molar buccal ridge mark. Right side, completion of the bends made when the second molar is included in the setup.

With the pliers in the same position, bend the distal section of the archwire lingually until the second molar area lies in a plane that parallels that of the first molar area. (Fig. 4, right side.)

Duplicate these two bends on the left side of the archwire and then test the archwire for flatness.

Mandibular Archwire

Step 1.—Conform the anterior segment of the archwire to the inner surface of the short, anterior segment of the drawing, using the archwire former to make this curve in the archwire. The curved section of the archwire should

extend to the distal canine marks but not beyond these. The ends of the archwire should be $\frac{1}{10}$ inch buccally to Dot 2. (Fig. 5.)

Step 2.—Mark the archwire with the white pencil, at points opposite the ends of the short, anterior segment of the drawing (see arrows on Fig. 5). Place the pliers on the right side of the archwire with the distal surface of their beaks on this pencil mark and make a lingual bend in the distal section of the archwire of sufficient degree to have the end of the archwire (or mesial surface mark of the second molar) contact the red drawing.

Fig. 5.

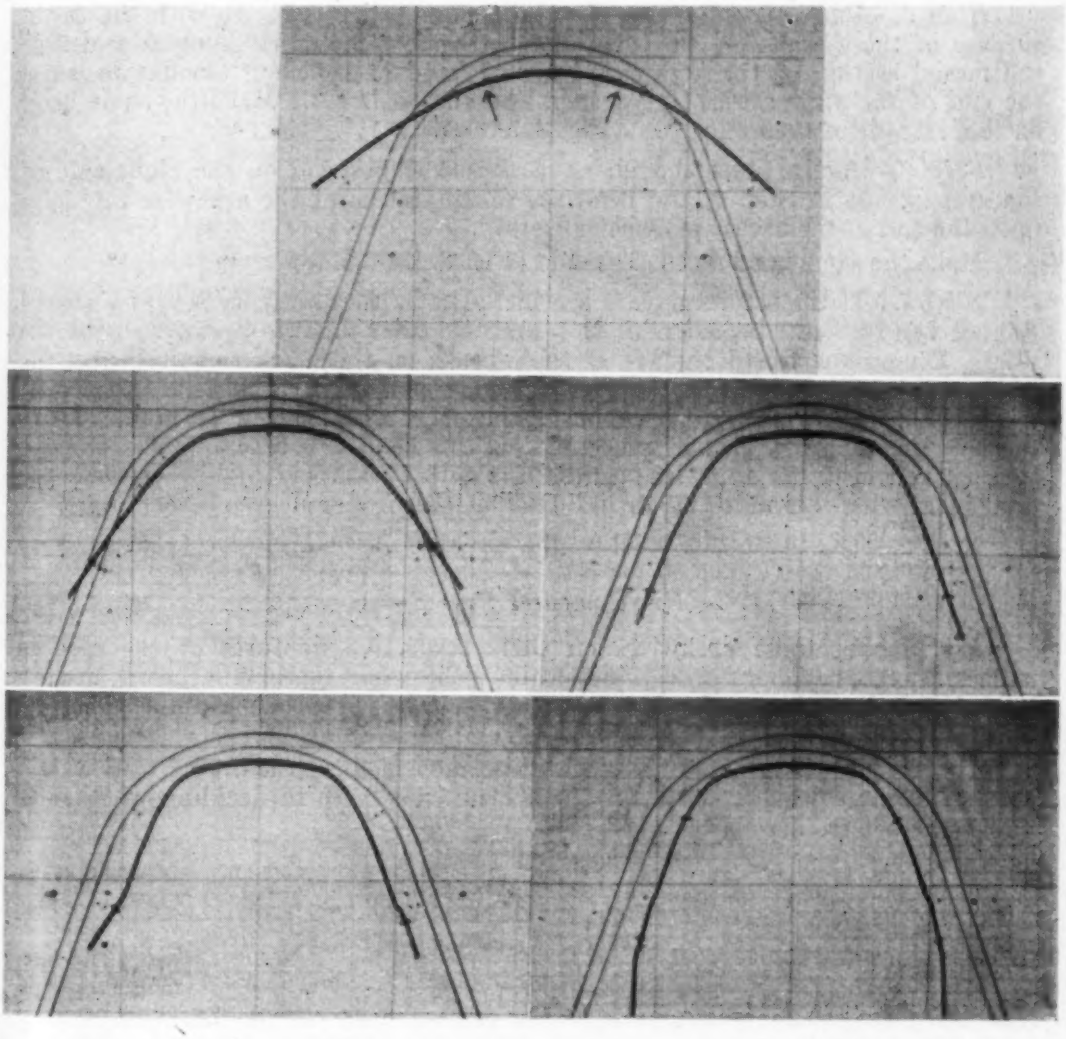


Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 5.—Mandibular technique. Archwire formed to the inner border of the broken segment of the drawing; curved section of the archwire not extending beyond distal canine mark and ends of archwire $\frac{1}{10}$ inch buccally to Dot 2.

Fig. 6.—Mandibular technique. Completion of bends made at points that are opposite the ends of the broken segment of the drawing.

Fig. 7.—Mandibular technique. Completion of the bends made in the canine areas; ends of archwire overlying Dot 3.

Fig. 8.—Mandibular technique. Left side, first bend made with the pliers $\frac{1}{16}$ inch in front of the first molar buccal ridge mark. Right side, completion of the first molar modification.

Fig. 9.—Mandibular technique. Bends made in the ends of the archwire when the second molars are included in the appliance setup.

Step 3.—Duplicate this bend on the left side (Fig. 6).

Step 4.—Replace the pliers on the right side of the archwire with the mesial side of their beaks on the white line. Bend the distal portion of the archwire lingually until the end of the archwire lies halfway between the red drawing and Dot 3.

Shift the pliers distally the width of their beaks and make a second bend lingually in the distal segment of the archwire of sufficient degree to cause the end of the archwire to overlie Dot 3.

Step 5.—Duplicate these two bends on the left side of the archwire (Fig. 7).

Step 6.—Place the pliers on the right side of the archwire with the distal surface of their beaks $\frac{1}{16}$ inch mesially to the first molar ridge mark and give the mesial section of the archwire a buccal bend of sufficient amount to cause the end of the archwire to lie $\frac{1}{10}$ inch buccally to Dot 3. Make the same bend on the left side of the archwire. (Fig. 8, left side.)

Step 7.—Again place the pliers in the same position on the right side of the archwire as in Step 6, and bend the distal section of the archwire lingually until the end of the archwire overlies Dot 3.

Make the same bend on the left side (Fig. 8, right side).

Step 8.—If the second molars are included in the appliance setup, a second lingual bend should be made in this area by grasping the archwire with the pliers, having the distal surface of their beaks on the mark that indicates the mesial, proximal surface of the second molar, and giving the distal section of the archwire a lingual bend of sufficient degree to cause the end of the archwire to move lingually $\frac{1}{10}$ inch. Before making this bend it is best to mark the position of the end of the archwire on the chart with a lead pencil and then make the final bend with this mark as an indicator of the proper degree of bending.

Step 9.—Duplicate this bend on the left side of the archwire (Fig. 9).

Supplemental Procedure

By placing these archwires on their respective dentures of the case in malocclusion, the operator can determine just what tooth movements are required and also, which is just as important, just what teeth should not be moved, especially in reference to the buccal and labial dimensions.

He can also determine how much distal movement of the buccal teeth would be necessary to provide space for the six anterior teeth in deciding whether or not to extract teeth.

SURGICAL TREATMENT OF DEFORMITIES OF THE JAW

KURT H. THOMA, D.M.D.,* BOSTON, MASS.

SURGICAL deformities of the jaws are pronounced malformations, which either did not get the benefit of orthodontic treatment when amenable, or were beyond the skill of the orthodontist from the start. Such deformities produce marked disfigurement that may be associated with psychic disturbances, and may mar the individual's happiness and even interfere with normal employment and social success. Some of these deformities may also cause important functional disabilities, interfering with speech and, through improper mastication, with adequate nutrition.

The deformities considered in this paper are mandibular protrusion, open-bite, and mandibular retrusion. They may be inherited or acquired.

Mandibular protrusion is very frequently hereditary in character; every orthodontist has seen many examples of this familial condition. In the adult it may be caused by hyperpituitarism, due to excessive production of the growth hormone. In the growing child an acromegaloid type has been recognized by Howard (1936),[1] with mandibular overgrowth and Class III malocclusion.

Open-bite may occur with or without mandibular protrusion. It may be caused by an underdevelopment of the premaxilla or by an angulation of the horizontal ramus of the mandible. The cause, particularly of the latter type, is generally a habit such as tongue thrusting, wrist sucking, etc. The two types should be differentiated carefully if surgical treatment is considered. The open-bite due to the underdevelopment of the premaxilla does not present as favorable an opportunity for surgical treatment as that caused by a deformity of the mandible.

Mandibular Retrusion. Marked mandibular retrusion is most frequently seen in cases of ankylosis of the temporomandibular joint. This disease may be acquired early in life from birth injuries occurring during delivery, from rheumatoid arthritis or infections of the mandibular joint acquired during childhood, or from poorly reduced condylar fractures or fractures through the tympanic plate with hemorrhage into the joint cavity. Among eighteen patients operated on for unilateral or bilateral ankylosis during the last three years, there were two with rheumatoid arthritis which had started at the age of 2 and 3 years, respectively, and two with fracture, one of the condyle at the age of 9 years and the other of the tympanic plate with hemarthrosis occurring at the age of 6 years. All of these patients had mandibular retrusion and Class II malocclusion.

Read before the New York Society of Orthodontists, March 4, 1946.

*Oral Surgeon and Chief of Dental Department, Massachusetts General Hospital, Boston; Professor of Oral Surgery, Harvard University.

Mandibular retrusion in these cases is caused by underdevelopment of the mandible. It is not clear how much this is due to injury of the condylar epiphysis and how much is due to the absence of muscular activity. Let us first study the deformities caused by early ankylosis.

DEFORMITIES OF THE MANDIBLE CAUSED BY EARLY ANKYLOSIS

The most important effect of early ankylosis is an underdevelopment of the horizontal ramus and impaction of the teeth. The ascending ramus shows generally a short condyle, enlarged in an anteroposterior direction, a thin and, in comparison to the deformed condyle, long coronoid process, and a very narrow mandibular notch. The widening of the neck of the condyle, occurring at the site of attachment of the external pterygoid muscle, is due, I believe, to apposition of bone which occurs as a result of the constant effort of this muscle to open the jaw. Another interesting observation is the prominent angle of the jaw found in most of these cases and the accentuated notch immediately anterior to it. In my opinion this is due to the action of the depressor muscles attached to the anterior part of the mandible, which come into action if great force is needed to open the jaw. Pulling the anterior part of the mandible down against a stationary ramus may cause bending at their junction. In order that the teeth may come into occlusion and perhaps partly because of the activity of this group of muscles, an increase in the vertical dimension of the anterior part of the mandible results (Fig. 1).

The effect of early ankylosis on the development of the mandible thus presents a complex picture, which allows us to develop theories regarding the growth of this bone. First let us consider the condylar epiphysis; if injured as it is in cases of birth trauma, the arrest in forward development is greater than in cases in which the immobilization is due only to destruction and fusion of the joint surfaces.

We may conclude from this observation that the condylar epiphysis plays an important part in the growth of the jaw. It must be looked at as a mechanism provided for effecting growth, while muscular activity provides the stimulating factor. In one of the cases I shall present, the side of the mandible, where, on account of birth trauma, the epiphysis had been destroyed was much shorter than the other which was affected only by lack of muscle function.

Beside these theoretical hypotheses there is a very practical aspect to this problem, the problem which involves the time when, in cases of early ankylosis, the best result may be obtained from an operating procedure. When should the patient be operated on to mobilize the ankylosed jaw?

Early operation has the following advantages:

1. It restores the ability to masticate and, therefore, prevents underdevelopment of the jaw, bird-face deformity, and impactions of crowded teeth.

2. It prevents underdevelopment and fibrous atrophy of the elevator muscles, which cause a great deal of debility if the operation is postponed for a considerable length of time.

3. It makes possible regular dental care, and, therefore, the teeth may be saved from carious destruction and the occlusion preserved. This is important

for a patient after an osteoarthrotomy, because if the condyle has been excised the vertical articulation is taken up by the molar teeth instead of the joint.

Late operation, on the other hand, must be given consideration, because it allows epiphyseal growth to continue. Unfortunately, I do not know, and, therefore, am unable to tell you, when the operation can be performed with the least amount of harm. It seems to me, however, that the number of harmful factors eliminated by early operation far outweighs the disadvantages of such a procedure.

Fig. 1.—Deformity of mandible caused by ankylosis. Profile x-ray by Dr. Sidney E. Riesner, New York.

DEFORMITIES OF THE MAXILLA IN EARLY ANKYLOSIS

In the maxilla also, deformities occur. These do not develop spontaneously; they are produced chiefly by the use of dilators employed by the patient to increase the ability to open the jaw. Clothespins, mouth props, and wood screws are used for this purpose, sometimes on the recommendation of a dentist who should know better than to advise a procedure which not only will injure the teeth but is certain to cause a deformity of the jaws if used for any length of

time, especially in a child, or a teen-age youngster. Besides, these measures bring only slight relief and an improvement which at the best is only temporary, while the resulting jaw deformity is permanent. Dilators and jaw exercisers have considerable value in cases in which opening of the jaw is inhibited by atrophy, fibrosis, or trismus of the masticatory muscles, but they are useless in preventing or curing ankylosis.

The deformity resulting from the use of dilators is a narrow protruding maxilla, with labioversion of the central incisors if lever action is applied, or linguoversion if the woodscrew has been extensively used.

ORTHODONTIC CONSULTATION

In all types of malformation an orthodontic consultation should be sought. The examinations should include the patient, x-rays of his jaws and teeth, and articulated models of the occlusion. The orthodontist will be able to give a valuable opinion regarding the anticipated occlusal result of the operation. Only the very naïve beginner might take it for granted that the surgical correction of the bone deformity will enable the patient to occlude his teeth normally. In most cases the occlusion will have to be adjusted by orthodontic methods and by grinding, and it is a rare case in which this is not necessary.

The orthodontist also is best equipped to furnish the necessary appliances for the fixation of the surgical fracture, and for intermaxillary fixation. These are needed even though transosseous wiring is used at the inferior border of the jaw. The combination of transosseous wiring and intermaxillary fixation, by the way, allows us to perform the operation behind the first permanent molar, at the site of a carious second molar or a second molar that has been lost.

THE SURGICAL TREATMENT OF MANDIBULAR PROTRUSION

Excessive mandibular protrusion may be treated surgically by one of two methods that are in vogue today. One is an osteotomy in the ascending ramus, which allows the jaw to be slid backward; the other is an osteoectomy in the horizontal ramus, that shortens the tooth-bearing part of the mandible. Here are the advantages and disadvantages of the two methods:

Osteotomy in the ascending ramus is easy to execute; it may be performed by means of a Gigli saw, or by an open intraoral operation, recently recommended by Moose of California (1945).[2] Oral contamination of the wound is eliminated if done with the Gigli saw. No teeth need to be sacrificed when this method is used.

It has been said that in an osteotomy of the ascending ramus, injury of the mandibular nerve may be avoided; however, in one of my cases in which this operation was performed by a well-recognized oral surgeon, the nerve was injured. A nerve injured or severed outside the bone does not grow together as easily as when the parts are lying in the mandibular canal.

The disadvantages are the following: There is danger of injury of important structures, the parotid gland causing a salivary fistula, the internal maxillary artery causing the formation of a hematoma, and the facial nerve

causing Bell's palsy. Another difficulty is the loss of a close relationship between the fragments. When the jaw is pushed back, contact is lost because the rami are angulated; this often causes considerable distraction which may be associated with nonunion. In other cases overriding may occur due to muscular trismus. In these cases the ramus is shortened, resulting in open-bite. This occurs particularly if intermaxillary fixation is inadequate, but it may also result later after intermaxillary fixation has been removed. Prolonged fixation, therefore, is often needed, and the jaw must be immobilized much longer than when the operation in the horizontal ramus of the jaw is used.

Osteoectomy in the horizontal ramus is the method I prefer for the following reasons: The site is accessible and the operation can be performed under direct vision, making the result more accurate. The control of the fragments is not as difficult as in osteotomy of the vertical ramus. There is no interference with important structures, including the muscles of mastication, and no trismus follows the operation. The mandibular nerve may be preserved by the latest technique, but if it is cut it regenerates easily. There is no danger of a resulting open-bite; contrarily, open-bite may be corrected by this operation. For simple prognathism a rectangular piece of bone is excised; this allows the anterior part of the mandible to be slid back without angulation. If an open-bite is to be corrected at the same time, a trapezoid piece is excised as described below.

One disadvantage of this method is the sacrifice of a tooth at the site of the operation, but this is offset because in most cases the third molar later erupts normally so that an adequate masticating surface is retained. Compounding of the wound is necessary, but asepsis can be obtained for the external procedure by following Dingman's two-stage technique. Dingman (1946)[3] recommended that a preliminary operation under local anesthesia be performed, in which the teeth are extracted and the piece of the alveolar process to be removed is cut on each side of the socket. The piece of bone, however, is not taken out until the oral wound has healed. The second part of the procedure, the osteoectomy in the body of the mandible, is carried out six weeks later from an extraoral approach under strictly aseptic conditions. Because the section of bone is not removed in one piece, the nerve and blood vessels can be preserved.

THE SURGICAL TREATMENT OF OPEN-BITE

Open-bite, if it can be alleviated by surgical means, should be corrected at the point where angulation occurs. This is in the horizontal ramus, generally in the region of the first molar or second premolar tooth. Osteotomy in the ascending ramus is contraindicated because closing the incisor bite would cause a distraction of the fragments, the action being that of a lever with the fulcrum on the last occluding tooth.

If open-bite exists without mandibular protrusion, the Y-shaped osteoectomy gives a satisfactory result. It allows for correct angulation without setting the jaw back any great amount, less than in the case of a V-shaped excision.

If there is mandibular protrusion present also, the osteoectomy becomes more complicated. The excised segment must allow both for angulation of the

anterior fragment and for the sliding back of the lower jaw. I use a geometric drawing (Fig. 2) to determine the amount and size of the bone to be removed. The drawing is made from a carefully taken x-ray picture. The section to be excised generally is of trapezoid shape, and a pattern is cut from a piece of heavy tin foil or thin lead sheath to be used at the operation. The osteoectomy is performed the same way as described for simple prognathism by a two-stage operation, although I have performed it in one stage either entirely from an intraoral approach or an intra- and extraoral approach. However, if the latter method is used, the operation is considerably prolonged by the shifting from the oral operation to the extraoral one, the latter requiring an entirely new setup to maintain complete asepsis.

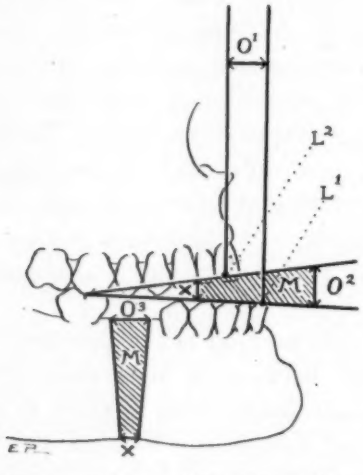


Fig. 2.—Rhomboid osteotomy for open-bite with prognathism. Diagram to determine the amount of bone to be removed to correct both prognathism and open-bite.

THE SURGICAL TREATMENT OF MANDIBULAR RETRUSION

The treatment of this deformity depends first of all on the presence or absence of ankylosis of the joint. The ankylosis may be unilateral or bilateral in nature and, therefore, may require an osteoarthrotomy on one or both sides of the jaw. If there is no ankylosis present, a sliding osteotomy in the ramus may give the best results. When the patient has a full complement of teeth, it is easier to do than a sliding osteotomy in the horizontal part of the mandible. If no teeth are present, the latter may be performed. The following are the details of the operative procedure recommended:

Osteoarthrotomy.—This operation is performed by means of an angulated vertical incision in front of the ear. The condyle is divided at the base of the condylar neck and removed by detaching it with an osteotome from the glenoid fossa and mandibular fossa of the base of the skull. No fascia lata has to be inserted or any other foreign body, since the space created by excision of the condyle is so large that there is no danger of renewed attachment and fixation of the jaw. Intermaxillary elastic traction may be used to position the jaw forward and to re-establish the new occlusion. If there is marked deficiency in the mental prominence of the chin, the appearance may be further improved by a cartilage

graft. In most cases the correction of the retrusion requires the use of a sliding osteotomy in the horizontal part of the jaw.

Sliding Osteotomy in the Horizontal Part of the Jaw.—This operation is useful in edentulous mandibles and may be performed on one side to bring the chin into the median line when the underdevelopment is unilateral, or on both sides to lengthen each side of the mandible. A Z-shaped or transverse osteotomy is performed, which allows sliding forward. The bone is wired, and the jaw immobilized by means of a splint and circumferential wires and, if necessary, by craniomandibular fixation if no teeth are present.

Sliding Osteotomy in the Ascending Ramus.—This operation is best performed with a vertical intraoral incision along the anterior border of the ramus as described by Moose. The inner surface may be exposed to view by a suitable retractor and cut with a Kayo saw. I should add to his technique, wiring of the fragments, which can be easily accomplished near the anterior border and will effectively prevent nonunion and overriding. It cannot be combined with an osteoarthrotomy.

CONCLUSION

The advantages and disadvantages of the various methods of surgical treatment of jaw deformities have been discussed, and the details of the operative procedures have been presented.

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PSYCHOTHERAPY IN ORTHODONTICS

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IN THE lifetime of our present-day orthodontics, we have had many philosophies of treatment, and a goodly number of techniques in carrying out this treatment. Most of the philosophies seem to have dealt with a biologic problem, and most of the techniques seem to be of a mechanical nature. It has seemed to me for some time that the psychic influence in the development and preservation of the face and the occlusion of the teeth is worthy of more consideration than it has been receiving in orthodontic procedures.

Perhaps if we can become more conscious of the spirit of behavior of the whole body as well as that of the face and the teeth, we may very well realize how neuromuscular training can be of real practical value.

A great many of the essays and case reports in orthodontic literature do not give much attention to the practical application of neuromuscular training and the psychic influence thereof. The reason for this is, undoubtedly, that some essayists do not realize its importance, and others do not feel that its application is tangible enough.

Several years ago, when I was quite young in the practice of orthodontics, I was introduced to a surgeon. Upon learning that I was an orthodontist, and having had orthodontic treatment for his children a few years earlier, he remarked, "Orthodontists dance the teeth right around into place and then they dance right back again." To say the least, I was startled by such a remark at that time, but I have been mindful of what he said all these years.

With this thought in mind, it has seemed to me more and more that mechanical therapy, as effective as it is in many cases of treatment, is not sufficient in itself. Only as it effects more normal habits of behavior of the teeth and associated parts of the face, the whole body, and the mind is correction stable.

Most writers of orthodontic literature appear to be cognizant of the fact that Nature, so to speak, under normal conditions can and does develop and care for the organism in its entirety by means of functional influences or nurtures. However, after this recognition of Nature's most important and powerful instrument in the development and preservation of the tissues of the body, there seems to be a lack of practical attention to this aspect of the problem at hand.

In our efforts in carrying out orthodontic treatment we have undoubtedly overlooked a very important factor which may in every case determine the success or failure of the treatment. This factor is the psychic control of the behavior of the lower facial area, especially as it relates to the oral and dental tissues.

Although it has been brought to our attention many times that function is a very important influence in the development and preservation of the face and

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the arrangement of the teeth, it is quite obvious that not enough practical consideration has been given to its importance. Perhaps if we become more aware of the spirit of behavior of the whole face and the whole body, we may develop a better appreciation of the problem. In this manner we may realize that the teeth are more or less incidental in the picture, rather than our only concern. We may also realize that many causative factors of malocclusion are to be found in the broader picture rather than in just the disarrangement of the teeth.

To survey the malocclusion and to design a magic appliance which will carry all the teeth to their ideal relative positions by the brute force of the appliance has been demonstrated many times to be an inadequate treatment procedure. As a result, many more teeth are being extracted these days because the jaws are not developing to a size large enough to contain the full complement of teeth.

It is not the purpose of this essay to convince you of the importance of extraction or its avoidance, but rather to call your attention to a few symptoms of causative factors of malocclusion and perhaps offer a suggestion or two in the control of these bad influences.

For every ideal occlusion and for every malocclusion, there are definite causative factors or nurtures. Our main duty is to recognize and appreciate what they definitely are. For, unless we have changed the environmental influences about the teeth in our treatment, we have not permanently accomplished what we started out to do.

One very important factor is what I choose to call the *sense of occlusion and articulation.* Labial occlusion and articulation are just as important as dental occlusion and articulation of the incisal area. Cooperation of the lips in posture and in function seems to govern the muscular equilibrium of the whole lower face. This is especially true in controlling the behavior of the tongue.

Undoubtedly there are many orthodontists who have wished they could make the tongue do its natural work of filling out and supporting the lower face in size and form, to give the alignment of the teeth and to establish the normal relationship of the jaws to each other. This is not always accomplished by the routine treatment of applying particular types of appliances to the teeth. Although it is possible sometimes by careful manipulation of the appliance to obtain satisfactory reaction of the tongue to more favorable support of the teeth and face, in many cases this does not occur sufficiently.

A careful study of the behavior of the tongue will reveal that it acts sympathetically with the lips and seems to be almost entirely under the control of their activity. Examples of this control seem to be revealed very well in different manners of swallowing. There are two manners of swallowing . . . one with the teeth in occlusion, the other with the jaws separated. When the teeth are in occlusion during the act of swallowing, the lips are in occlusion and are cooperating. Sympathetically the tongue comes into its normal position of support of the teeth and surrounding tissues. If, however, the teeth are not occluded during the act of swallowing, the lower lip cooperates with the upper incisors and the tongue does not bear pressure as it does when the teeth are oc-

cluded. The particular way in which the lower lip cooperates with the upper incisors determines whether there will result a Class II, Division 1, or a Class II, Division 2, malocclusion.

Although Dr. Angle gave us a very fine description of Nature's plan, and many others have added a great deal to our biologic appreciation, many orthodontists have not applied biologic principles of treatment. They have most frequently applied mechanical principles. They have too often considered the patient more as inert material rather than having the composition of living responsive tissue.

Many fine examples of natural function influences upon the development and preservation of the human face and teeth were portrayed by Dr. Leuman M. Waugh in his data on the Eskimo. These examples of ideal development and preservation are the results of ideal natural behavior.

In 1919, Dr. Alfred P. Rogers read an essay before the American Society of Orthodontists entitled, "Teaching Our Patients to Overcome Undesirable Muscular Habits." I should like to quote something of what he said:

> In helping our patients to help themselves we have a psychological problem. It is none other than the teaching of our patients to break old and disastrous muscular habits and substitute in their places normal muscular action. In teaching *conscious control* of any muscle or group of muscles it will be understood that *the will of the child must be so strengthened that it is able to withstand the insidious demand for wrong actions. The seat of the trouble is in the mind, and to the mind the operator must direct his attention.*
>
> It will frequently be found extremely difficult to assign any reason for many of the actions which will come under his notice. In fact, the majority of these habits are exasperatingly unreasonable, and therein lies a potent cause for anxiety. The actions are almost invariably found to be unconsciously performed. Some actions are slow, others are so quick as to almost deceive the eye. Some are performed during the waking hours, some during the hours of sleep. Studious children, of a not too robust constitution, are frequently found to be the victims of these self-deforming habits. In a word, they seem to be an accompanying compensating evil which nature exacts of us more and more as civilization advances.
>
> It is usually good practice when undertaking the correction of any habit to request the parents to make no reference to the habit in the hearing of the child; to leave the entire treatment in the hands of the operator. It is then essential that the child's attention be called to its abnormal performance in such a manner that it is brought to understand the nature of the habit and its consequences. Next, *There must be created within the mind of the child the conscious desire to rid itself of whatever action is proving disastrous.* . . . The efforts cannot be intermittent, but must constitute as regular and as active a part of the treatment as the application and adjustment of appliances. They must also be accompanied by whatever methods the operator finds necessary for the building up of the health and strength of all muscular tissues surrounding the muscles involved, because teaching the conscious control of other groups of muscles will tend to develop a stronger will power in relation to muscle work, one that will be instrumental in destroying the abnormal impulse.
>
> In undertaking the treatment of these victims of habits, one of the first duties of the orthodontist is to endeavor to establish a more healthy and a more normal environment for his patients. Prescribe more outdoor life, more natural modes of living, greater care in selection of foods, less anxiety on the part of the parents for the extra scholastic standing by these children which is so often obtained at the cost of serious sacrifice of health through the excessive demand on their nervous energy.

Every orthodontist might well dwell upon these thoughts expressed by Dr. Rogers, in these few lines. I was especially attracted to his reference to the

will of the individual. For I believe that the will of the individual determines his behavior, also that the behavior of the body, especially the oral and facial tissues, determines to the greatest degree the formation of the face and arrangement of the teeth.

In a malocclusion, just as in normal occlusion, Nature has made her adjustment of the teeth according to the individual's attitude in function and posture.

Behavior of the oral and facial areas may be said to include the manner of facial and oral expressions, the act of biting, the occlusion and articulation of the teeth, the occlusion and articulation of the lips, the manner of swallowing, the manner of breathing, and so on.

All of the physical activities of the face and mouth are under the control of the mind and inversely the activities of the face and mouth establish impressions in the mind. Consequently, we might well conclude that the organs of the lower face and the mind are habituated by practice or continuous repetition of of the manner of these acts.

By this review of some of the natural habits of the tissues with which we are concerned, I am attempting to make you realize that correcting the habits of the individual is most important in treatment.

When we speak of habits we may realize that there are many which come to the attention of almost everyone. To mention a few—sucking the thumb, biting the nails, mouth breathing, etc. There are many more which are not fully appreciated even by the most profound students. To mention some of these we might say—the pose of the tongue, the equilibrium of the musculature, the degree of sensitivity of the nervous tissues, the amount of stress and the direction in which it is borne by the osseous tissues, the manner of speech, and so on.

Nervous reflections control all of these habits of function and posture. Inversely, sensory impressions in the mind determine the habits of thought and subconscious mental behavior.

There are potential functional influences which can be brought to bear by observing certain natural rules. Many of the malocclusions and maldevelopments are the results of disobedience of these natural rules.

We must, first of all, know what the rules are. I shall attempt to bring to your attention a few practical rules of normal, natural behavior which I feel that I have observed:

1. Normally, Nature does not serve food and drink at the same time.
2. Nature depends on hunger and thirst to urge the organism to eat and drink. (Our problem is how to create the appetite.)
3. A definite amount of exercise (natural function) and a definite amount of rest must be provided.
4. The quality of the food must be such that it provides work for the organs of mastication as well as to contain certain elements of nutrition, such as minerals, fats, vitamins, and so on.
5. Vocal communications and facial expressions (speech, song, crying, laughing, smiling, frowning and so on) reflect the mentality and its behavior.
6. Natural hygiene is accomplished by function (the circulation of the food must be vigorous enough to reach all tissues lining the oral cavity).

Undoubtedly, there are many natural rules which we shall never fully appreciate, but these are some which give us a working basis for our treatment.

Our customary records do not reveal fully what the causative factors of the malocclusion are. The cast, the photograph, and the x-ray do not record the activity of behavior which is manifested in the clinical picture. Many symptoms of normal or abnormal behavior are revealed by the response of the patient in his conversation, in his facial expressions, in his moods, in his wishes, in his resentments, in his fears, in his boldness, in his timidity, and so on. These, and many other personal characteristics, such as the tonicity of the lips, cheeks, and tongue, are most important in diagnosis and treatment.

By being more mindful of the influence of these functional activities we may realize how important habit training can be in aiding orthodontic treatment.

The stimulus imparted to the framework of the face by the attachment of the lips and cheeks to the osseous tissues is of the greatest importance to stimulate the form and size of the jaws and establish and maintain their relationship.

Blowing a feather or a pencil off the table at a distance of 4 to 5 feet is an excellent exercise for training these particular tissues to more normal activity and posture.

Dr. Rogers' water exercise is a wonderful training influence on the musculature. This is done in two ways: The first stage is carried out by forcing the water back and forth lightly and quickly with the teeth tightly closed. This gives a sort of vibratory influence to all of the facial tissues. The second stage is carried out by doing the same thing but quite forcefully. This can be done by ballooning out the whole face, then directing the water toward one cheek, then toward the other, then toward the upper lip, and then toward the lower lip, and so on, until the whole face feels very tired. Only a few minutes are required.

This exercise, to be practically carried out routinely, should be associated with brushing the teeth every night and morning. The patient should be made to realize that this is not just a rinsing of the mouth. If he feels that it is for that purpose alone he will not close the teeth tightly and thereby the stimulating influences may not be properly directed.

The attachment of the labial and buccal tissue to the osseous framework of the face, especially where basal bone is desired, has seemed to me to be of the greatest importance. Through the stimulus exerted to the bone at these points of attachment, Nature pulls the tissues into normal shape. Lack of functional activity produces emaciation of the basal bone as well as other tissues.

Habit training to be practical should be more than doing some particular exercise. It should be concerned with the direction of the everyday behavior of the person. For instance, we may have a particular problem of a child who does not like any kind of food which requires biting and chewing. This, most generally, is the result of the child's training by the parents and the abnormal direction of his natural behavior relative to the lower face.

How shall we deal with such a problem? Shall we merely explain to the child and the parents that he has been doing something wrong and ask the child

to do better? Almost any child will promise to do better, and the parents will say that they will remind him when they think of it. This sort of psychology is not very practical unless it leads to some definite plan of procedure which will give exacting control of the habits of the patient.

If we tell the parents that the child must not mix his food and drink because it makes him swallow in the wrong manner, and then they allow a large glass of milk or water to be placed within his reach, his promise to do better will not mean much. However, if the drink is left off the table until after the meal is finished, he will not mix his food and drink. If you will observe animals in their natural behavior, you will note that they do not have food and drink served at the same time by Nature. They generally must go to a different place to drink from the place where they eat.

If we tell the parents that more vigorous biting and chewing are necessary for correction of the abnormal habits of the mouth and for the development of the jaws, and then they allow the child to satisfy his appetite with foods which do not require much effort for mastication, his promise to do better will not be of much practical value. But if the child is hungry because his appetite has not been satisfied with such foods as puréed vegetables, milk, orange juice, candy, and so on, there will be an automatic correction in the manner in which he eats. He will also eat foods which require more effort. The spirit of vigorous eating is very important in training the habits of the facial tissues. For instance, when a person attempts to swallow a good-sized morsel of somewhat resistant food, he sets his teeth together and swallows hard with a certain sense of determination and proper direction of effort.

There are a great many psychological factors which can be brought into action to help us solve our orthodontic problems. This may be better appreciated if we realize that moods and wishes determine behavior of the person, and that to a great extent his attitude must be changed.

Mealtimes can be converted into training periods if the parents as well as the child may be made to realize the importance of training. This training must be carried on constantly until normal habits of the mouth and related structures of the body and the mind are permanently established.

Only as the attention of the person to such functions as biting, speaking, breathing (nasally), chewing, and tasting is obtained, can the behavior of these parts of the body be controlled. Attention does not necessarily mean conscious thought but rather instinctive awareness of these functional activities.

At this point, I should like to tell of a case observed in a school clinic. The patient was a girl, 7 or 8 years of age, in whose mouth all four six-year molars were destroyed by caries and had to be extracted. Needless to say, the deciduous dentition was also destroyed by caries, and the gums were badly inflamed. It was a typical case of lack of functional activity in the mouth.

The history of the case revealed that the little girl had been living with her grandmother, and when we inquired of the grandmother as to what sort of diet the little girl was in the habit of eating and if the diet included vegetables, she remarked, "Oh, I have the worst time trying to get her to eat vegetables. All the vegetables have to be strained, and even then she won't eat them."

Apparently, in this case, the grandmother was trying to be especially nice to the child by making the food as fine as she could and by coaxing the child to eat. The child was very fussy and rebellious and the grandmother was more and more worried.

I told her not to be worried about the child's starving to death if she skipped a meal, and that perhaps she would respond to eating better if she were not coaxed but allowed to develop a little hunger. Two weeks later, the grandmother came in just to tell us that the morning after she had been in the clinic, the child ate the first real breakfast since she had come to live with her. She said, "I followed your instructions but I could hardly bear to let her go to sleep without her dinner. It seemed to me that I just must carry something to her to eat before she went to sleep."

It seems to me that practically most of the malformations of the face and malocclusions of the teeth are the results of perversions of normal functional processes within the lifetime of the individual. Heredity is most frequently blamed for conditions which it is not entirely responsible for. To a great extent the individual develops his characteristic behavior through training. Familial customs have much to do about it.

In the quarterly periodical, *Child Study* (winter, 1945-1946), Dr. Harry Bakwin points out, in his consideration of "the psychologic needs of the newborn baby," that a breast-fed baby gets little food in his first three or four days of neonatal life. This is Nature's prescription to urge the baby to try harder in feeding, for the purpose of stimulating his mother's milk supply.

At this particular time of life there is always anxiety on the part of the hospital personnel to have the baby gain weight and so there is an urge to feed him artificially. When this is done, his appetite is fouled and he loses interest in natural nursing. If he is constantly satisfied with food without having to make the normal effort, his mind will focus less upon the facial area of the body.

Normal patterns of behavior in function and posture are, to a great extent, primed and established at this age—patterns of behavior which determine several years later a normal occlusion or a malocclusion.

Following soon after the sucking age comes the biting age. When teeth appear, Nature is prescribing a change of diet, one which establishes the sense of articulation of the upper and lower incisors and the sense of biting. This calls for weaning. If the liquid diet does not change to a more resistant one at this stage of development, the behavior pattern will not be properly directed and nurtures will be set in motion which will eventually produce facial deformity and malocclusion.

At later stages of development also, the behavior pattern depends upon training. Such foods as milk, orange juice, and puréed vegetables do not stimulate the normal psychic reactions of the individual to direct the normal behavior pattern in mastication. This liquid diet is baby food from which the individual would have graduated automatically if he lived more primitively.

Just when the training is applied is a study which is unending. Perhaps the greatest influence is established in very early childhood. Even the unborn is responsive to many influences.

I should like to raise a question in your mind concerning a particular case of malocclusion. In a family of several children, all of them were quite normal except one who had a lack of normal development of the face and malocclusion.

Upon examination of the child, it was apparent to me that there was a perversion of the normal behavior of the oral tissues. The child was of a nervous temperament and was a poor eater. Also her speech was indistinct.

After some discussion of the case with the father of the child, he told me that the mother had gone on a limited diet about one month before the child was born, because she thought she was too fat. He then asked me if this might have had anything to do with the trouble they have had with the child in feeding habits.

The question I want to bring to your mind is: was the abnormal behavior pattern established before birth by nervous irritations caused by the disturbance of the diet?

I believe Professor Gesel in his book, *The Embryology of Behavior,* has illustrated that behavior systems are existent at eight weeks of unborn life.

I shall not attempt to expound the realm of psychiatry, but psychiatry has much to offer the orthodontist in a practical way.

A few years ago in a school clinic, I observed a case, presenting an anterior open-bite, which seemed badly in need of help.

Some casts of the teeth were made and some photographs were taken in a more or less awkward way in the clinic. Then appliances were placed on the teeth and treatment was carried on for a while. After a short period of treatment it became necessary for the mother of the child to go away to a sanatorium for her health, at which time the appliances were removed from the child's teeth.

At the time treatment was interrupted, another set of casts was made and, as you will notice from the photograph of the casts, there was still a severe open-bite of the anterior teeth. In an effort to do everything possible under the circumstances, I instructed the child to make an attempt to use her incisor teeth. Of course the average food would not be bulky and resistant enough to cause her to bite with the incisors, and so we struck upon the idea of using a clothespin to bite on for a short period each day. She did this by chewing the ball part of the handle and tearing off slivers which she would spit out.

In Fig. 1 you will observe four sets of casts made periodically. The change which took place between the first and the second was with the use of appliances, and the changes thereafter were without appliances.

Fig. 2 shows photographs of the face before treatment.

Fig. 3 shows photographs of the face at the time that the third set of casts was made.

Figs. 4, 5, and 6 show photographs which were developed from frames of a movie film. The movie film was made in an attempt to record the mouth and facial expressions relative to the malocclusion. There is much to be desired in the quality of the photography, but perhaps you will be able to appreciate from it the few points I wish to bring out.

After observing the effects from training on the clothespin, I began to use a little wooden blade, and to my amazement many patients were very cooperative. Formerly, when using such instruments as a rubber strap or a rubber dumbbell, the patients would not cooperate as well. The reason for this is that, when the patient is biting and chewing the wooden blade, he develops a feeling of satisfaction in having accomplished something by breaking and tearing the blade into bits.

Fig. 7 will portray the manner in which the patient uses the blades. At first he will bite and haul on the blade with the incisors. After a while he will develop a stronger bite and will be able to break off a small piece of the blade. This is shown, between the teeth, in the lower photograph.

Fig. 8 portrays, on the left, direct and lateral views of the patient without the bite blade, and on the right, the direct and lateral views of the patient with a small fragment of the bite blade in place between the incisor teeth.

The patient is instructed to set a definite time each day to bite and chew with the incisor teeth. If he has a favorite radio program that he listens to, it will be a fine time to select for doing the chewing. This works out very well, for he will be reminded of his biting exercise by his interest in the radio program. The time can be fifteen minutes or a half hour, and he chews the wood into a pulp and spits it out.

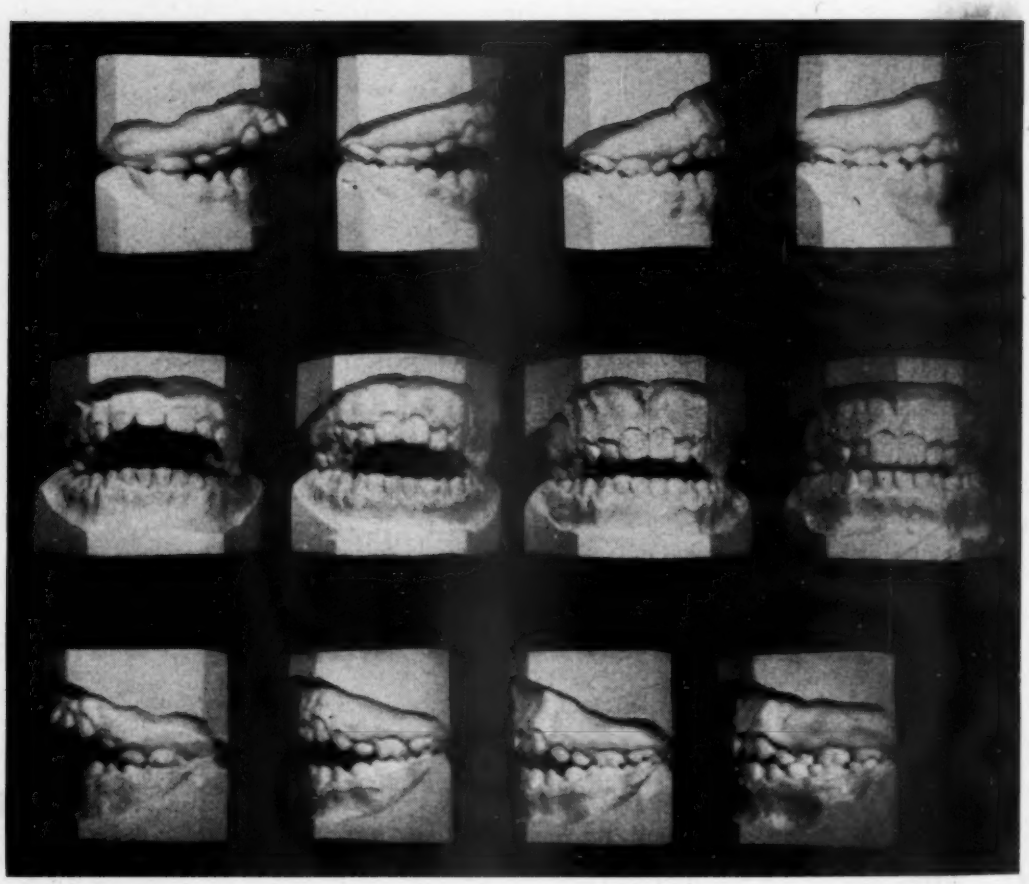

Fig. 1.

Fig. 9 shows more photographs developed from movie frames. The upper photographs show facial expressions without the blade. The lower shows the difference in biting on the incisors and biting on the molars. In most cases there is a weakness of the sense of incisal bite. By biting with the incisors all of the tissues of the face are alerted to more normal balance.

Perhaps one of the most important reactions of incisal biting and chewing is the swelling effect of the tongue as it supports the framework of the lower face.

Fig. 2.

Fig. 3.

Fig. 4. Fig. 5. Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10 shows a photograph developed from a movie frame. It shows a large crease in the midline of the tongue. The folding of the surface of the tongue is a symptom of the deficiency of support to the lower face.

Fig. 10.

Fig. 11.

Fig. 11 shows a series of photographs developed from a movie film. These photographs portray the folding and creasing in the surface of the tongue, which occurs when the tongue is habitually down and backward from its normal position. These symptoms of deficient and perverted habits of the tongue along with facial distortions, and speech inflections are revealed to us in our clinical observation almost exclusively. This is so because they are not too easily appreciated and recorded.

These symptoms of organic unbalance are just as worthy of our concern and study as the malocclusion of the teeth. For instance, certain patterns of creasing of the surface of the tongue are associated with particular types of malocclusion.

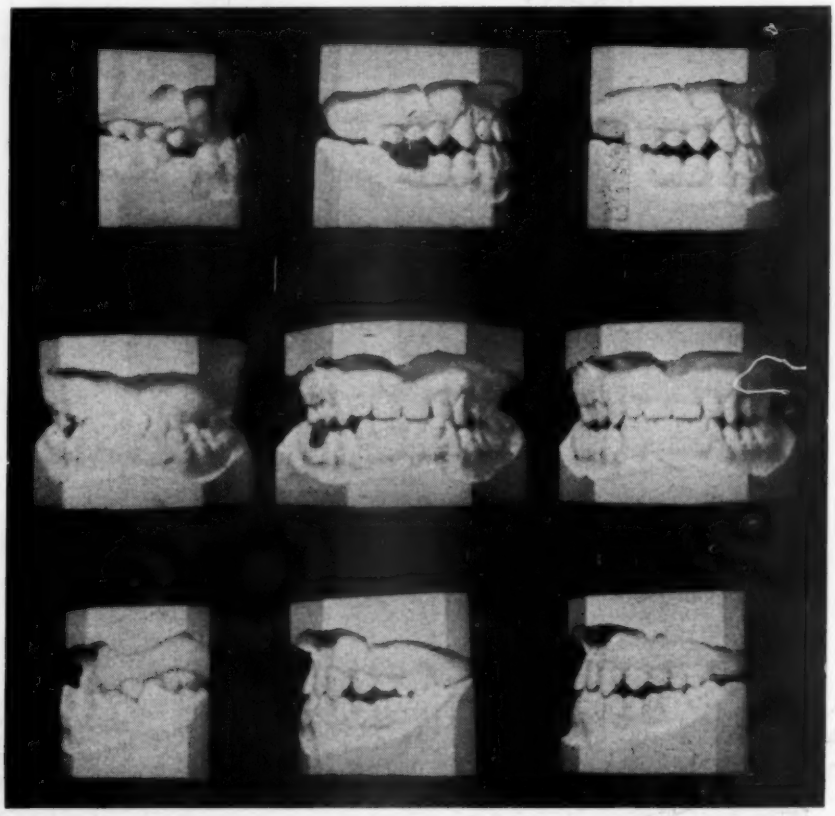

Fig. 12.

Fig. 13.

Further study will reveal that there is not only somatic unbalance but mental unbalance as well. Therefore, it becomes necessary to consider training in treatment.

Fig. 12 shows the casts indicating a mesioclusion. In this case, bands were fitted to the lower molars, and cribs were built up to throw the bite open. A lingual arch was placed on the upper teeth for expansion of the dental arch, and the bite blades were used to develop the sense of incisal bite, which, you might easily realize, was quite absent. After the incisors began to function somewhat in a more normal manner, the cribs on the molars were reduced in height, and later the one on the left was removed, as shown in the cast. The black spot in the middle cast of the upper group is the right crib. Later it was removed, as seen in the upper right-hand cast. The whole occlusion seems to be settling down quite favorably.

Fig. 13 shows photographs of face after correction, taken from movie frames.

Photographs before treatment were missed because photographic materials went to war.

Fig. 14 shows casts of a case with a lingual incisal bite. In this case no cribs were used on the molars.

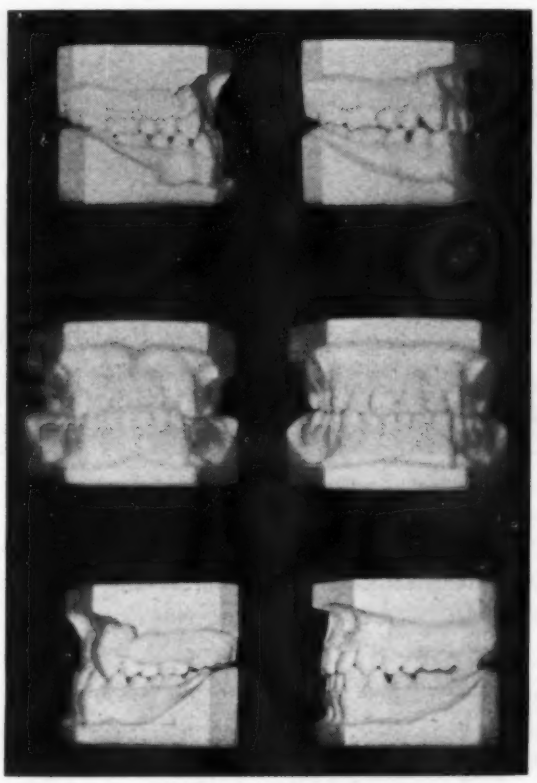

Fig. 14.

Fig. 15 shows photographs taken from movie frames at end of treatment, showing the facial posture at rest, on the left. The photograph on the right shows the lower face alerted in an effort to break off a small portion of the blade.

You may realize by observing the curvature of the blade that in order that the blade may be broken in this manner, the lower incisors must bite lingual to the upper incisors.

Fig. 16 also shows a photograph of the occlusion of the teeth at the end of treatment. The patient was extremely sensitive to light and, as you may observe, is suffering from exposure to it.

This particular way of developing the strength of the bite and training the facial tissues can aid in any type of mechanical therapy.

I believe that successful treatment which results from extraction of teeth

depends upon the establishment of a stronger sense of incisal bite and labial articulation. This is equally true of cases without extraction of teeth.

In cases of mandibular resection it is not enough to provide the advantage of normal relationship of the upper and lower incisors, but the individual must become accustomed to the new arrangement. If he continues with the same muscular equilibrium that existed before the surgical correction, the correction will not be stable. Therefore, training after the surgery should be an important part of the therapy. Training will prime the teeth to more normal habits of biting and articulation which have been absent or perverted for a great part of the individual's life.

Fig. 15.

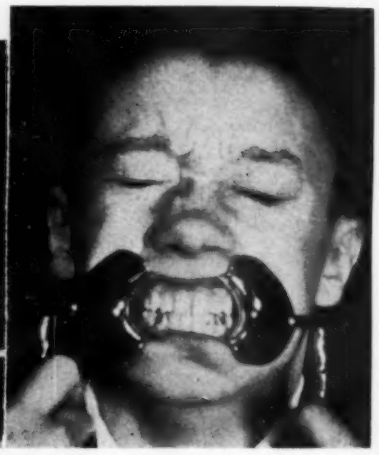

Fig. 16.

The psychic and functional guidance is very well demonstrated by the success in treatment with the Kesling tooth positioning appliance. This particular appliance when properly used trains all of the tissues of the face rather than merely positioning the teeth.

I believe that Nature does not allow successful positioning of the teeth without an accompanying psychic readjustment. I also believe that successful orthodontic treatment (whether it be preventive or corrective) depends on a mental focus upon incisal and labial articulation.

Psychic and functional training is by no means to be considered a substitute for the various mechanical therapies but rather an aid to them. Indeed, it might well be said that it deserves first consideration, for it is undoubtedly the basis of successful treatment in any technique.

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There may be members in the Service whose names do not appear in the above list. These members should notify the secretary at once so that their names may be included.

Max E. Ernst, Secretary, American Association of Orthodontists, 1250 Lowry Medical Arts Bldg., St. Paul, Minn.

Resolutions of the New York Society of Orthodontists

EDA B. SCHLENKER

It is with deep regret and a feeling of grief that we learn of the death of our beloved member, Eda B. Schlenker, which occurred on July 18, 1945.

Dr. Schlenker had been head of the Orthodontic Department of the Eastman Dental Dispensary since 1917. She was born in The Netherlands, and was graduated from the Medical School of the University of Utrecht before coming to this country in 1912. Two years later she received a dental degree from the University of Michigan.

Dr. Schlenker leaves two sisters in The Netherlands, and a legion of friends and professional confreres who mourn her loss.

WHEREAS, by her death we have lost a much beloved member, whose professional and outstanding character reflected high honor upon our Society, as well as upon the dental profession, it is fitting that we should record Dr. Schlenker's sterling qualities as revealed to the members of this Society, that they may forever be fresh in our memory, for it is written, "Better is the fragrance of a good name than the perfume of precious oils."

THEREFORE, BE IT RESOLVED, that a copy of these resolutions be spread upon our minutes, and a copy be transmitted to her sisters in The Netherlands, as an expression of our heartfelt sympathy.

IRA BURTON STILSON

On Sept. 28, 1944, we were saddened by the news of the death of our beloved member, Ira Burton Stilson. Dr. Stilson was one of the early specialists in the field of orthodontics, and he believed that every man owes some of his time to the upbuilding of the profession to which he belongs. He was born in Walton, New York, on Sept. 13, 1873, and graduated from the Delaware Literary Institute in 1891, and from the School of Dentistry of the University of Pennsylvania in 1895.

Dr. Stilson received his certificate of graduation from the Angle School of Orthodontia in 1909, and throughout his professional life had given freely of his time for the benefit of the dental profession and orthodontics in particular.

He was Chief of Staff, in the Department of Orthodontia, at the Joseph Samuels Dental Clinic for Children, Rhode Island Hospital, from its opening until his retirement from practice in 1940. He taught at the Harvard Forsythe School of Orthodontia in 1919 and 1920.

Dr. Stilson held membership in the Connecticut State Dental Society, the New England Dental Society, Rhode Island State Dental Society, the Eastern

Memorial minutes adopted by the New York Society of Orthodontists on March 5, 1946.

Association of Graduates of the Angle School of Orthodontics, The New York Society of Orthodontists, and the American Society of Orthodontists. He was a past president of the Rhode Island Dental Society, the New England Dental Society, and the Eastern Association of Graduates of the Angle School of Orthodontists. His genial smile, gentlemanly manner, and many other sterling qualities endeared him to all who knew him.

It is fitting that we should record his professional attainments, his personal qualities, and his high-minded sense of duty toward his profession, the public, and his friends, which are expressed in Pete Emmet's poem,

TO AN OLD FRIEND

When we have lived our little lives
And wondered all their by-ways through,
When we've seen all that we shall see
And finished all that we must do,
When we shall take one backward look
Off yonder where our journey ends,
I pray that you shall be as glad,
As I shall be, that we were friends.

When we have met all we shall meet,
And know what destiny has planned,
I shall rejoice in that last hour,
That I have known your friendly hand;
I shall go singing down the way
Off yonder as my sun descends,
As one who had a happy life,
Made glorious by the best of friends.

FLOYD E. GIBBIN

It is with profound regret and sorrow that we learn of the death of our fellow member, Floyd E. Gibbin, on Dec. 12, 1945, at the age of 54.

Dr. Gibbin was born in Farmersville, New York, and was graduated from the University of Buffalo in 1912. He practiced general dentistry in Springville, New York, from 1913 to 1930, after which time he specialized in the practice of orthodontics in Buffalo, New York.

Dr. Gibbin was a 32nd Degree Mason and a veteran of World War I, having served overseas with Base Hospital 112. He held memberships in the American Legion, Delta Sigma Delta Fraternity, Torch and Greater Buffalo Advertising Clubs, and Central Presbyterian Church. His dental affiliations were American Dental Association, Eighth District Dental Society, New York Society of Orthodontists, American Association of Orthodontists, International College of Dentists, American Society of Dentistry for Children, and Buffalo Dental Association. He was also a diplomate of the American Board of Orthodontia. He was a Past Master of the Blue Lodge and a Past President of the American Society of Dentistry for Children.

In his will, Dr. Gibbin directed that the University of Buffalo Dental School will ultimately receive the residue of a trust fund for instruction in the field of preventive orthodontics.

Dr. Gibbin served dentistry in many capacities and contributed much to dental and orthodontic literature. He will be missed by his many friends. Dr. Gibbin leaves a widow, Elizabeth B. Gibbin, and a brother, Leslie A. Gibbin, of Springville, New York.

WHEREAS, it pleased the Almighty to remove Dr. Floyd E. Gibbin from our midst;

WHEREAS, he was a fellow member of the New York Society of Orthodontists;

WHEREAS, he contributed much to dental and orthodontic literature and service;

BE IT RESOLVED, that the New York Society of Orthodontists express its deep regret in the loss of one of its members, Dr. Floyd E. Gibbin.

BE IT FURTHER RESOLVED, that these resolutions be spread on the minutes, and a copy of the same be forwarded to the JOURNAL and also to his widow.

FREDERICK LESTER STANTON

It is with profound regret and deep sorrow that we learn of the passing of our fellow member, Frederick Lester Stanton, one of our outstanding pioneers in orthodontics.

Dr. Stanton was born in Norwich, Connecticut, seventy-two years ago, and died Jan. 1, 1945. He received his early education at the Brooklyn Boys High School, and graduated from the New York College of Dentistry in 1892. Early in his professional career he became interested in orthodontics, and in 1905 graduated from the Angle School of Orthodontia, which at that time was held in St. Louis. Returning to New York to resume his professional career, he limited his practice exclusively to orthodontics, and in 1906 organized the Alumni Society of the Angle School of Orthodontia, and served as its president in 1907.

The same year he and the executive committee founded a publication known as *The American Orthodontist,* which was the first journal published exclusively in the interest of orthodontics. This journal was of great importance, and contained the original paper of the late Dr. Albin Oppenheim entitled, "Tissue Changes, Particularly of the Bone Incident to Tooth Movement."

Dr. Stanton's contributions to orthodontics were many, among which were "Distal Occlusion of the Deciudous Teeth," which appeared in 1906; "Orthodontic Diagnosis," in 1907; "Some Suggestions," 1912; "Heredity," 1913; Breathing Exercises in Conjunction With Orthodontic Treatment," 1913; "Engineering Principles Applied to Dentistry," 1914; and, "Movement of Teeth Predetermined by Engineering Instruments." He designed and made two surveying instruments to be used in dentistry, and a pantographic surveying apparatus to predetermine the functioning position of malposed teeth in 1918.

His was a useful and active life; although misunderstood by some, he was admired and respected by all who knew him. Through his efforts orthodontics has gained much, and we owe to him a great debt of gratitude for his untiring labors in our behalf.

For these and many other efforts which have benefited humanity and his chosen profession,

BE IT RESOLVED, that the New York Society of Orthodontists recognize in this all too brief tribute the debt we owe to him, and hereby record its appreciation of the labors of Dr. Frederick Lester Stanton, in behalf of his chosen profession.

BE IT FURTHER RESOLVED, that this record be made a part of our minutes, and a copy of the same be sent to his widow and family, also to the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY as a permanent record.

Resolution of the Eastern Association of Graduates of the Angle School of Orthodontia

HARRY ESTES KELSEY

Harry Estes Kelsey was born July 9, 1872, at Pomona, Kansas, and died March 1, 1946, at Baltimore, Md.

Harry Estes, the son of Samuel Truman and Katherine Ricksecker Kelsey, spent his youth in North Carolina, receiving his education in the public schools and under private tutors. Having a creative and mechanical turn of mind, he chose dentistry as a profession, selecting the Baltimore College of Dental Surgery as his Alma Mater. Upon graduating in 1896, he received the appointment as Demonstrator, a position he held until 1910 when he was promoted to the Professorship of Orthodontics.

Fortunately for orthodontics, his mind leaned toward "straightening teeth," and desirous of obtaining a better foundation in the subject, he became associated with Dr. E. A. Bogue of New York City. This connection afforded Harry the opportunity to become acquainted with many of the older generation of practitioners in dentistry then seriously interested in this field of practice.

It was only natural, then, when Dr. E. H. Angle in 1908 moved his school to New York, that Dr. Kelsey felt that the advanced instruction offered by this school was desirable. Upon matriculating there he met among his fellow students Milo Hellman, John V. Mershon, and Fred B. Noyes. These four, having much in common, worked together and established a friendship that has continued throughout the years. It is worthy of note that all four of these men have been honored in receiving the Ketcham award and that all have left an indelible imprint on orthodontic history.

As Dr. Kelsey's varied interest and activities in many societies will be related by others, we will confine ourselves to those that pertain to the Eastern Association of Graduates of the Angle School of Orthodontia.

Dr. Kelsey was one of the original charter members of this Association, always taking an active interest in its affairs. He was its first historian in 1909 (Report in the *American Orthodonist* **2**: 54). In 1913-1914 he served as Vice-President and in 1915-1916 as President. For years he was a member of either the Executive or Scientific Committees.

Those of us who were fortunate to attend the many meetings in Baltimore will always remember him for the gracious host he was. His office was always "open," where we were sure to find something of value and interest. For the scientific meeting there were presented repeatedly papers of importance by the foremost man in a particular field. Along with these were the dinners, which at that time could only be prepared in Baltimore and under Harry's supervision.

Not as Dr. Willard Flint once wrote,

"But at the journey's end there's hope,
if you can only wait,
For on the day you're laid away they
all will say you're great."

We in this and other associations did not need to await that day to appreciate Harry's sterling character and his contributions to the advancement of orthodontics.

Dr. Kelsey's contributions were many, prepared from his practical experiences. In his Presidential Address in 1916 he presented what proved to be the foundation for his future activities in orthodontics. He stated: "This is a subject (further orthodontic training) which is or should be very near to the hearts of all orthodontists desirous of real progress in the profession. Unless we see to it that the best provision is made for the education of more men these lines, we are under the suspicion of existing as a profession for our own benefit only . . . It is the duty to find out as time goes on if this is true, and to aid in directing into this specialty the class of men that will be a credit to it." The many years he served on The American Board of Orthodontics enabled Dr. Kelsey to fulfill this hope and aspiration.

Dr. Kelsey's concluding remarks in the paper he presented before the closing meeting of this Association, "The Effect of the Angle School in Its Influence Upon the Devolopment of Modern Orthodontics," might well apply to himself:

> It is not my place here to dwell upon the achievements of the men who have graduated from the Angle School, but it is appropriate to say that as a whole, they have carried on the traditions of a small but notable teaching unit which was assembled and led by a man whose whole heart and soul and life were put into the specialty of orthodontics . . .

We have listed his contributions in our record published in 1939 along with those of his fellow members. They were among the milestones on the road of orthodontic progress. He has now joined those who have passed on and who will not be forgotten as long as orthodontics exists. A band of fellows with like ideals will probably never form a closer circle and never achieve higher aims.

We of the Eastern Association of Graduates of the Angle School of Orthodontia cherish the memory of his comradeship and his active and sympathetic participation in the advancement of orthodontics.

For these many reasons, *Be It Resolved* that the Eastern Association of Graduates of the Angle School of Orthodontia recognize in this brief tribute its debt to and appreciation of his work.

Be It Further Resolved, that this record be added to the minutes of this Association and a copy be sent to his widow and to the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY.

"They are passing away, these dear
departed friends,
Like leaves on the current cast
With never a break in the flow
We watch them as one by one they go
Into the solemn past."—(D. W. Flint.)

B. W. WEINBERGER, President
MILO HELLMAN, Vice-President
E. SANTLEY BUTLER, Secretary
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Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

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The Orthodontist and the Dental Attendant: By K. Corisande Smyth, L.D.S., R.C.S. (London, Eng.), *Dental Record* **65**: 241-248, November, 1945.

The reception of the child on his first visit is of great importance, and may affect the whole period of the child's treatment. In orthodontic practice it is necessary that both the child and parent are present at the first interview, and indeed at most subsequent visits. This means that the orthodontist has to pay attention to two people during these visits, which is especially difficult at the first interview because there is strangeness all round, and probably there is some nervousness.

It is most important that neither parent nor child shall feel neglected during this interview, even for a few moments. There must be an unspoken understanding as to this between orthodontist and dental assistant, and the latter must listen all the time to the conversation of the orthodontists and be ready to take up her cue as to what she should be doing as the interview proceeds. She will bring in parent and child, and on her way from the waiting room she will make sure she knows the child's correct name, and will announce first the parent's name and then the child's to the orthodontist at the door of the consulting-room. The parent—nearly always the mother—will of course enter first, and be received by the orthodontist and led to a chair beside the writing desk, if possible away from the dental chair. Meantime the assistant is looking after the child.

It is most important that the child should not be allowed to wander round the room without knowing where to go. The assistant should understand how the chair works and know how to make it comfortable for a child of any size.

The conversation varies considerably, some mothers at once plunging into long accounts from which it is difficult to break off. If this happens, the assistant will have to put in the time by showing the child how the chair works, mixing mouthwash, putting on a napkin, etc., and keeping up a conversation with the child which will distract his attention from the parent's conversation. The talk must be in a low tone, and the child will nearly always follow the example given and talk quietly also. If necessary, a book can be used to occupy the time, but a small child should not be left alone, even with a book, but the pages should be turned together.

As soon as the orthodontist comes across to the dental chair, the assistant should take up her position at the desk and proceed to take down certain particulars from the mother. These are to be done as routine in every case, and include not only business items such as full address, telephone number, father's initials, etc., but more personal details such as schooling arrangements. If the child is at boarding school, the full address, name of head of school, or matron,

are required, and if possible the name and address of school dental surgeon, or one in the nearest town to whom children can be sent from school, should be obtained.

The child's date of birth, height, and weight are needed; if any of these particulars are not known, the parent must be asked to find them out and bring or send the information, unless there are means of taking height and weight on the spot. Then the assistant can go on to find out whether the patient's tonsils and adenoids have been removed, or whether there has been any trouble in this connection, and whether there are, or have been, any sucking habits. If there has been a sucking habit, exact details are necessary—when the habit started, how long it went on, and just how the thumb, or finger, or fingers, or tongue or lip has been inserted.

Shorthand is very useful, though not essential. What is essential is a real grasp of dental charting and nomenclature, so that when details of the occlusion of different teeth are given, they can be taken down with absolute accuracy. With regard to right and left side, there are two ways of getting this correctly: one is by imagining that you have the patient's face in front of you, divided by the central vertical line of your cross-sign.

If it is certain that models will be required at this visit, the child is prepared with napkin in position and mouthwash mixed, spitoon water flowing. If this has not been done, it needs to be done quickly when impressions are required. The impression materials must be kept on hand, and the assistant should be proficient in handling various impression materials and plaster of Paris.

The impressions taken, they must be put aside safely, with a ticket or label. This is easy with composition, but with colloid it is important to cover the impressions with a damp napkin, and even when so covered, the impression should be cast within a few hours, the sooner the better. Both with composition and colloid, it is very important for the free edges of the impression not to rest against the receptacle in which it is left. In the case of composition there is the danger of incomplete cooling allowing the edge to bend, which may fatally distort the impression. In the case of colloids, if the impression is left with the back edges resting on the dish, there is a great danger of the edges breaking right away, especially if they are thin. The impression must be propped up in such a manner that all of the edges are quite free from pressure, and then wrapped carefully in a damp cloth. It is not convenient to tie a label on the tray in this case, so a separate slip must be kept with each impression. Plaster impressions must be kept in separate dishes always and unbreakable photographic developing dishes are useful. The impressions are almost always in separate pieces, and if they are not going to be put together within an hour or so, they too must be covered with a damp cloth.

The assistant should make suggestions from the appointment book, with an intelligent foresight as to the length of appointment required for the next stage of treatment. She will probably already know from the conversation how long the appointment should be, and how far ahead. She may have gathered that a fixed appliance is to be made, and in this case must find out from the orthodontist whether the next visit is for the fitting of separating wires, which is a short job, or whether for making two bands, which is fairly long, or four bands, which is a job needing a full hour.

When the child is released from the chair by the orthodontist and if not a very young child, he is asked to put on hat and coat and get ready to go. The assistant should be on the alert and, as soon as the appointment is settled, should guide the child along and see that no time is wasted.

This first consultation is of great importance to all concerned, and the sympathetic cooperation of the assistant is invaluable. There is a friendly rela-

tionship established which will be of great value in subsequent visits. The assistant is ready to step in and take charge of the child at any moment at a hint from the orthodontist, though it is very important for her not to interfere unless a clear hint is given. If there is any difficulty in controlling a child—which very seldom happens in orthodontic work—it is always better for the orthodontist to deal with it singlehanded, without interference from either the assistant or the parent, unless help is definitely asked for.

There is very little use of drugs in this type of work, limited to a few simple antiseptics and drying agents such as alcohol. The mixing of cement is frequently needed, but the amounts and consistency are different from those needed in filling work, being used for attaching metal bands to teeth.

The array of instruments is also more simple. Beyond mirrors, probes, and a few excavators, no ordinary dental instruments are used. Pliers are the instrument chiefly used, and there is quite a variety of these to be learned about, and it is a great help if they can be kept always in their right places so that they can be picked up without a search. Most are used in the mouth, but some only at the workbench, which is a necessary part of the equipment of an orthodontic consulting room. The workbench pliers do not need sterilizing, but the others do, and should be kept in antiseptic for a time after use, and then carefully wiped and polished with a clean dry cloth before being returned to their place. There should be duplicates of all pliers and instruments in constant use, so that no undue rush in sterilizing is necessary.

If excavators and scalers are used for scaling, as is sometimes necessary, and when the occasional very loose tooth is removed by the orthodontist, the instruments must of course be boiled in the usual way. The wooden tongue depressors which are used for the child to bite on in the making of metal molar bands are also boiled and put in a current of air to dry before being put away.

Instruments used for cementing should always be put into cold water as soon as possible after use; then the cement will soon flake off both splatula and slab without any trouble. If a roughened instrument has been used to push the band into place when cemented, the cement clings to it stubbornly and must often be carefully scratched out of the grooves with an old broken instrument, even after soaking. If the cement is left in, it not only looks exceedingly unpleasant but impairs the efficiency of the instrument which must not have a smooth surface.

The dental engine is seldom used, and usually only for polishing teeth that are stained or smoothing off the rough edge of a fixed appliance in the mouth, but of course it does require the usual occasional care in oiling, etc., and the carborundum stones, rubber polishing disks, etc., which are used, can be sterilized and carefully dried.

The workbench is used by the orthodontist constantly, not only for filing and altering removable appliances, but also for making and welding fixed appliances, both while the patient is in the chair, and at other times. In fact, the workbench often needs clearing up two or three times on a busy day, when it gets rows of models scattered about, pieces of wire, wax filings, etc., and a muddle of pliers lying around. It is a great help to have some of this cleared, for instance, filings and wax pieces, and to have pliers restored to their places; but do not let clearing up become a mania so that the half-made appliance is thrown in the waste bin. Files can be scoured with a wire-cleaner and restored to their appointed places. The drawers of the workbench inevitably get dirty and full of pieces more quickly than the drawers of a cabinet, and need a more frequent spring cleaning. Impression trays should be kept bright and smooth and arranged in some definite order so that selection is easy.

To sum up, the *essential* qualities of a dental assistant in an orthodontic practice are as follows:

1. A love and understanding of children.
2. An ability to listen to conversation and note down essential points, and a readiness to "pick up a cue" as to what to do next. In other words, full co-operation with the orthodontist.
3. Method and order in keeping records and caring for instruments.
4. Intelligence in arranging appointments with a view to the needs of each case, and also in considering the personal difficulties of patients who have long distances to travel and who have trains to meet from school and trains to catch on to somewhere else. (In the school holidays this presents problems similar to those of a jig-saw puzzle.)

The following is a list of qualities, *some* of which are desirable, but *all* of which could hardly be expected in one human being:

1. Ability in typing, shorthand, and bookkeeping.
2. Mechanical ability—casting and trimming models, and perhaps making parts of appliances.
3. Photography—ordinary indoor photography, possibly developing and printing as well, and possibly x-ray work.
4. Drawing and illustrating for the preparation of scientific records.

Function Versus Nutrition as a Controlling Factor in Dental Health: An Anthropologic Survey: By Meyer Klatsky, D.D.S., New York, N. Y., J. Am. Dent. A. **32**: 1416-1426, 1945.

Klatsky discusses the dental problem from an anthropologic point of view. The masticatory apparatus of modern man is undergoing a series of retrogressive changes. Dental caries is rampant. Periodontal disease is constantly on the increase, and the number of cases of underdevelopment of the jaws and irregularity of the teeth is assuming alarming proportions. Ancient, prehistoric, and primitive peoples suffered but little from these ailments afflicting our civilized races.

The marked disintegrative changes in the masticatory organs and face of modern man that accompany civilization constitute a problem of major significance. It no longer is a matter of one or more dental diseases that we are to contend with. Instead, we are confronted with a degeneration of the entire masticatory apparatus. What is the basic cause of these degenerative changes? Why is it that modern man, who is steadily progressing physically and culturally, should be regressing so far as his dental system is concerned? Is faulty nutrition the primary cause, or is lack of function of the masticatory organs the determining factor? Klatsky believes that the latter is the cause, and disproves the former. He takes to task Weston A. Price who has for many years been championing the cause of faulty nutrition as a cause of dental degeneration. If lack of inorganic salts and vitamins in the diet causes dental degeneration, it should also effect notable degenerative changes in the rest of the body. One would expect, then, to find modern man a physical degenerate as compared with ancient or primitive man. Scientific study tends to show that, irrespective of his dental organs, modern man has all the marks of physical superiority to ancient and primitive people. Furthermore, this physical superiority of civilized man is brought about by favorable environmental conditions, among which better nutrition plays a prominent part. Modern man is of better organic development, of higher stature, is less susceptible to disease, and has a longer life span than the primitive.

Klatsky contends that the underdevelopment of the masticatory organs and their great susceptibility to disease are aberrant conditions which are con-

fined entirely to this part of the body, and that these conditions are caused by lack of function of these organs. He gives three good reasons why the masticatory organs of civilized people do not function properly. First, because of the physical consistency of food. We live mainly on soft or liquid foods which do not stimulate the masticatory organs to great activity as do the hard fibrous, bulky, and resistant foods consumed by primitives. Second, because of our civilized table manners. We teach our children that food must be chewed gently and imperceptibly. Wide opening of the mouth, forceful chewing, lip smacking are bad style; hence they are tabooed. Table manners, which are the direct outgrowth of our rushing civilization, were unknown to primitive people. Third, because our masticatory organs do not receive any artificial stimulation. Civilized people are conscious of the role that physical exercise plays in the health and development of the human body. This is the main reason that gymnastics, acrobatics, and all kinds of athletic sports are so popular. Physical culturists recommend special sets of exercises to provide stimulation to the muscles of the arms, hands, legs, feet, toes, neck, shoulders, lungs, etc. Not a muscle in the human body is overlooked. Unfortunately, exercise for the muscles of mastication is not provided by any of the gymnastics, calisthenics, or athletic sports that we indulge in. The masticatory organs are in greater need of artificial stimulation than any of the other bodily organs because they are not employed sufficiently in the act of food chewing, and yet they are the most frequently neglected by the public and overlooked by the medical man. It falls upon the shoulders of the dental profession to remedy this situation.

Klatsky sums up as follows:

1. The masticatory apparatus of modern man is of greatly inferior development, and his teeth and periodontal tissues are more susceptible to disease than those of ancient and primitive people.

2. The tendency among many investigators to ascribe these degenerative changes to nutritional factors and diet deficiencies has no scientific basis.

3. If faulty nutrition played an important role in dental degeneration, it would also have an adverse influence on the human organism as a whole.

4. An anthropologic survey shows that civilized man is physically far superior to man of the past and to contemporary primitive races. His general build, his skeletal structure, his organic development, and his average stature transcend those of the primitive. He is more resistant to disease and has a greater span of life than the primitive.

5. Better food and better nutrition play an important part in this evident physical superiority of civilized man.

6. Changes in diet and the addition of vitamins or inorganic salts will not radically affect the disintegrative changes in the masticatory organs, and will not solve the problem of dental degeneration.

7. Use and employment of organs play an important part in the development and maintenance of health of these organs.

8. The organs of mastication of civilized people are neglected and inadequately used, owing to the physical nature of the food we eat.

9. Soft and liquid foods do not offer sufficient exercise to the muscles of mastication and the teeth.

10. Civilized manners and habits contribute greatly to the inactive and dormant condition of the masticatory apparatus.

11. The masticatory organs are not stimulated by artificial means as are all the other organs of the body.

12. The restoration of function to the masticatory apparatus is the greatest problem confronting the dental profession at the present time.

News and Notes

Pacific Coast Society of Orthodontists, Southern Section

The Southern Section of the Pacific Coast Society of Orthodontists held their regular quarterly meeting on March 22 at the Ambassador Hotel in Los Angeles.

The afternoon session was called to order by the Chairman, Dr. Wilbur Bedford. Table clinics on interesting and difficult cases were presented by Drs. Howard Lang, Charles Linfesty, Dallas R. McCauley, and Ben L. Reese.

The clinics were followed by the first of two lectures by Michael J. Walsh, B.Sc., M.Sc., F.I.C., A.I.Ch.E., San Diego, California, on "The Essence of the Orthodontic Problem."

The members were then entertained and instructed by Dr. John Griffin, who has recently returned from an extensive trip covering South America and Mexico under the auspices of the State Department. Dr. Griffin told in a very interesting manner of the peoples and countries he visited. He appeared before many dental groups lecturing in Spanish on orthodontics, and was instrumental in organizing several orthodontic groups in the various countries he visited. His lecture was beautifully illustrated by colored slides secured on the trip.

A resolution in memory of our late Honorary Member, Albin J. Oppenheim, M.D., was presented by E. M. Johnston and unanimously adopted. It extolled his valuable research in our field, lauded his cooperative spirit and cheery personality, and recommended so advising his surviving relatives.

A letter from Dr. Donald G. Goudry, Supervisor of Dental Service of the City Schools of Los Angeles, asking for certain information regarding cases referred to orthodontists by the school dentists, was read.

Chairman Bedford called the members' attention to the coming meeting of the Pacific Coast Society of Orthodontists in San Francisco on May 27, 28, 29, 1946, urging all to be in attendance.

The scientific feature of the evening was the second lecture of the day by Mr. Walsh continuing with his discussion of the "Essence of the Orthodontic Problem."

He opened his subject with his definition of orthodontics as "a speciality of dentistry dealing essentially with the straightening and realignment of mal-spaced, mal-placed teeth."

This identification, he felt, is technically false to fact, as it ignores the true essence of the orthodontic problem which involves such inescapable facts as: the patient's gastro-intestinal tract, blood, endocrine and nervous systems, heredity, prenatal and postnatal environment; influence and discipline of parents, pediatricians, teachers, and relatives, under whose guidance the patient may develop personality and behavior patterns, habits, and attitudes related to malocclusion of the teeth.

Mr. Walsh was of the opinion that to correct this present false approach there is a need for an entirely different kind of examination of the patient, viz: at the microscopic instead of the macroscopic level, which will incorporate into office practice the studies of (a) growth; (b) endocrines; (c) nutrition; (d) emotions; (e) correlations of the organisms as a whole in an environment as a whole, which stresses the primary need of fundamental mechanisms for evaluating accurately the orthodontic problem.

American Association of Orthodontists

The next meeting of the American Association of Orthodontists will be held at the Broadmoor Hotel, Colorado Springs, Colorado, Sept. 30, Oct. 1, 2 and 3, 1946. Members of the American Dental Association are invited to attend this meeting. Proper credentials should be obtained in advance from the secretary of the American Association of Orthodontists or from the secretary of a constituent society.—MAX E. ERNST, Secretary, 1250 Lowry Medical Arts Bldg., St. Paul 2, Minn.

It has been announced that the Antlers Hotel, in Colorado Springs, Colorado, is in a position to take care of guests for the meeting of the American Association of Orthodontists who may be unable to secure accommodations at the Broadmoor, the headquarters hotel. Reservations should be made quite some time in advance.

American Board of Orthodontics

The 1946 meeting of the American Board of Orthodontics will be held at the Broadmoor Hotel, Colorado Springs, Colorado, Sept. 26, 27, 28, and 29, 1946. Orthodontists who may desire to be certificated by the Board may obtain application blanks from the Secretary, Dr. Bernard G. deVries, 705 Medical Arts Building, Minneapolis 2, Minnesota.

Prize Essay Contest, American Association of Orthodontists

The Research Committee of the American Association of Orthodontists has been empowered by the Board of Directors to conduct a prize essay contest.

Eligibility.—Any student enrolled in a recognized university or any person who has completed his or her formal education in orthodontics not more than three years prior to June 1, 1946, is eligible to compete for the prize.

Essay.—The essay must represent a piece of original research having a direct bearing on the field of orthodontics. It may relate either to a biologic or clinical problem and may represent material that has been offered in partial fulfillment of the requirements of a graduate or postgraduate degree, or any graduate, postgraduate, or undergraduate contest. No papers previously submitted and now published or in press will be accepted for the present contest. All essays must be in the hands of the committee by June 30, 1946. If no essay is deemed worthy by the committee, the prize will be withheld.

Award.—The prize has been set at $200.00; in addition to this, the traveling expenses of the winning essayist to and from the meeting will be paid. The essay will be accorded a place on the scientific program of the annual meeting of the Association at Colorado Springs, Sept. 30, 1946, and the prize will be awarded at this time. The Association will retain publication rights on the first three choices.

For further information, address: ALLAN G. BRODIE, Chairman, Research Committee, A.A.O., 30 North Michigan Avenue, Chicago 2, Ill.

New York Society of Orthodontists

The next meeting of the New York Society of Orthodontists will be held at the Waldorf-Astoria Hotel, New York, on Monday and Tuesday, Nov. 4 and 5, 1946.

University of Illinois

The first of a series of twelve-week postgraduate refresher courses in dentistry opened on the Chicago campus of the University of Illinois, Monday, May 6, 1946.

Financed in part by a $50,000 grant from the W. K. Kellogg Foundation, the new course is intended primarily for returning veteran dental officers. Demand for the course was so great that capacity enrollment was reached shortly after the first announcement of the new program. It will be repeated in the fall, beginning September 9.

Three guest members have been appointed to the Illinois faculty to participate in the course. They are: Dr. George Hollenback, Los Angeles; Dr. F. E. Roach, Chicago; and Dr. Philip Modgeski, on leave of absence from the University of Texas School of Dentistry.

Dr. Isaac Schour, who has organized the new postgraduate work, has been appointed Associate Dean of the College of Dentistry in charge of postgraduate studies.

National Committee of Dentists Not Officially Connected With American Dental Association

Inquiries from many members of the American Dental Association have been received at the Central Office in Chicago regarding the newly formed "National Committee of Dentists Cooperating with the National Physicians Committee for the Extension of Medical Service."

This committee has solicited funds from members of the American Dental Association to oppose the enactment of the Wagner-Murray-Dingell bill. The statement of the committee indicated that it hopes to collect $75,000 from dentists for this purpose.

In response to these inquiries, Dr. Harry B. Pinney, General Secretary of the American Dental Association, issued the following statement:

"The Central Office has received inquiries in connection with requests to members to give financial assistance to support the legislative program conducted by the 'National Committee of Dentists Cooperating with the National Physicians Committee for the Extension of Medical Service.'

"This new committee is an independent group not officially supported, directly or indirectly, by the American Dental Association. The Board of Trustees, acting on a similar proposal from the National Physicians Committee for the Extension of Medical Service in 1940, agreed that the resources of the American Dental Association were sufficient for present legislative purposes.

"For many years, it has been the policy of the Association not to solicit or use financial support of any outside agency in the furtherance of its legislative program. It has also been the policy of the Association to provide all needed resources to its committees for the proper prosecution of a desirable legislative program. No new circumstances have arisen under which a change of these fixed policies is indicated.

"Contributions to the National Committee of Dentists should be made only after the individual has satisfied himself personally as to the merits of the projects in which the committee and its cooperating body are engaged."

Notes of Interest

Dr. James Barrett Brown has returned from the Army to the practice of plastic and reconstructive surgery in association with Dr. Vilray P. Blair, Dr. Louis T. Byars, and Dr. Frank McDowell, 400 Metropolitan Building, Grand Avenue and Olive Street, St. Louis 3, Missouri.

Dr. Arlo M. Dunn, B.Sc., D.D.S., announces his return to private practice after serving as a dental officer in the U. S. Army. Practice limited to orthodontics exclusively at 939 Medical Arts Building, Omaha, Nebraska.

Charles Johnson Goldthwaite, D.D.S., has returned from military service and is associated with George Cowles Brown, D.D.S., 332 Main Street, Worcester, Massachusetts. Practice limited to orthodontics.

Dr. Willis H. Grinnell announces the removal of his Boston office to 15 Bay State Road, Boston 15, Massachusetts. Practice limited to orthodontics.

Dr. Jerome S. Grosby announces his return from military service and the reopening of his office, Suite 544-46, Missouri Theatre Building, 634 North Grand Blvd., St. Louis, Missouri. Practice limited to oral surgery, exodontia, and diagnosis.

F. R. Harding, D.D.S., announces his retirement and the succession of George S. Harris, D.D.S., M.S., to his practice of orthodontics.

George S. Harris, D.D.S., M.S., announces the removal of his offices to 7-266 General Motors Building, Detroit 2, Michigan. Practice limited to orthodontics.

Dr. Russell E. Irish announces that on and after July 1, 1946, his office will be located at 5039 Jenkins Arcade, Pittsburgh, Pennsylvania. Practice limited to orthodontics.

Dr. Harry N. Moore announces the association of Dr. Fred F. Crutcher in the exclusive practice of orthodontics, 502-504 Cobb Building, Seattle 1, Washington.

To the Officers of Orthodontic Societies Throughout the World

The Editorial Board of the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY has decided that it will be the policy of the JOURNAL in the future to publish the names and addresses of the officers of the various orthodontic societies in the January issue of each year instead of each month as in the past.

The JOURNAL will continue, however, to publish the names and addresses of the officers of the official component societies of the American Association of Orthodontists each month.

All other societies should have the names and addresses of their officers for the current year in the hands of the Editor no later than November of each year in order to insure publication in the January issue.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY is the official publication for the American Association of Orthodontists and the following component societies. The editorial board of the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY is composed of a representative of each one of the component societies of the American Association of Orthodontists.

American Association of Orthodontists

President, Archie B. Brusse - - - - - - - - - - - 1558 Humboldt St., Denver, Colo.
President-Elect, Earl G. Jones - - - - - - - - - - 185 East State St., Columbus, Ohio
Vice-President, Will G. Sheffer - - - - - - - - - Medico-Dental Bldg., San Jose, Calif.
Secretary-Treasurer, Max E. Ernst - - - 1250 Lowry Medical Arts Bldg., St. Paul, Minn

Central Section of the American Association of Orthodontists

President, C. S. Foster - - - - - - - - - - - - 803 Dows Bldg., Cedar Rapids, Iowa
Secretary-Treasurer, L. B. Higley - - - - - - - - 705 S. Summit St., Iowa City, Iowa

Great Lakes Society of Orthodontists

President, Willard A. Gray - - - - - - - - - - Medical Arts Bldg., Rochester, N. Y.
Secretary-Treasurer, C. Edward Martinek - - - - - - 661 Fisher Bldg., Detroit, Mich.

New York Society of Orthodontists

President, Glenn H. Whitson - - - - - - - - - - 80 Hanson Pl., Brooklyn, N. Y.
Secretary-Treasurer, Oscar Jacobson - - - - - - - - 35 W. 81st St., New York, N. Y.

Pacific Coast Society of Orthodontists

President, J. Camp Dean - - - - - - - - - - - - 1624 Franklin St., Oakland, Calif.
Secretary-Treasurer, Earl F. Lussier - - - - - - - 450 Sutter St., San Francisco, Calif.

Rocky Mountain Society of Orthodontists

President, Henry F. Hoffman - - - - - - - - - - 700 Majestic Bldg., Denver, Colo.
Secretary-Treasurer, George H. Siersma - - - - - - 1232 Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

President, J. E. Brown - - - - - - - - Merchants National Bank Bldg., Mobile, Ala.
Secretary-Treasurer, Leland T. Daniel - - - - - - 407-8 Exchange Bldg., Orlando, Fla.

Southwestern Society of Orthodontists

President, Brooks Bell - - - - - - - - - - - - Medical Arts Bldg., Dallas, Texas
Secretary-Treasurer, James O. Bailey - - - - - - Hamilton Bldg., Wichita Falls, Texas

American Board of Orthodontics

President, Frederic T. Murlless, Jr. - - - - - - - 43 Farmington Ave., Hartford, Conn.
Vice-President, Joseph D. Eby - - - - - - - - - 121 E. 60th St., New York, N. Y.
Secretary, Bernard G. deVries - - - - - - - - Medical Arts Bldg., Minneapolis, Minn.
Treasurer, Oliver W. White - - - - - - - - - 213 David Whitney Bldg., Detroit, Mich.
James D. McCoy - - - - - - - - 3839 Wilshire Blvd., Los Angeles, Calif.
Claude R. Wood - - - - - - - - - Medical Arts Bldg., Knoxville, Tenn.
James A. Burrill - - - - - - - - 25 E. Washington St., Chicago, Ill.

In the January issue each year, the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY will publish a list of all of the orthodontic societies in the world of which it has any record. In addition to this, it will publish the names and addresses of the officers of such societies.